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Financial Responsibility for Transporters of Hazardous Waste

Moshman Associates, Inc, Bethesda, MD

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(2) Discusses current insurance availability, coverage and cost for
transporters of hazardous materials and wastes by mode and size of carrier;
(3) Discusses typical "clean-up costs" for mitigation of damage to
human health and the environment;
(4) Identifies the adequacy, or inadequacy, of current financial
responsibility practices of carriers, both in terms of self-insurance
and purchased insurance to cover cost of spill "clean-up" and
(5) Discusses alternatives for adequate levels of ancial
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CONTENTS

Page

Appendices vii
Figures. viii
Tables ix
Acknowledgements x

I. INTRODUCTION 1
  A. Objectives 1
  B. Limits of Analysis 2
    1. Transporters' Insurance Practices 2
    2. Cost of Spill Clean-up 3
    3. Adequacy of Present Financial Responsibility Practices 3

II. SUMMARY OF RESEARCH PERFORMED, FINDINGS, AND RECOMMENDATIONS. 5
  A. Existing Regulations 5
  B. Current Insurance Practices 6
  C. Cost of Spill Clean-Up 8
  D. Adequacy of Existing Coverage 10
  E. Need for Standards, Control Options. 11
  F. Recommendations 12

III. FEDERAL AND STATE REGULATIONS ON FINANCIAL RESPONSIBILITY OF TRANSPORTERS OF HAZARDOUS WASTE . 14
  A. Overview 14
  B. Railroads 14
  C. Carriers by Water 16
    1. Federal Regulations 16
    2. State Regulations 21

CONTENTS (cont.)

Page

D. Motor Carriers of Property 21
  1. Federal Regulations 21
  2. State Regulations 23

IV. CURRENT INSURANCE PRACTICES OF TRANSPORTERS OF HAZARDOUS WASTE 35
  A. Overview 35
  B. Current Financial Responsibility Practices 36
    1. Railroads in General 36
      a. Small Railroads 38
      b. Large Railroads (Class I railroads) 43
    2. Water Carriers in General 48
      a. The Water Quality Insurance Syndicate 50
      b. Protection and Indemnity Coverage (Marine) 54
      c. Survey of Water Carriers 55
    3. Motor Carriers in General 58
      a. Survey of Motor Carriers 62
        i. hazardous waste transporters 63
        ii. non-waste transporters 66

V. COST OF SPILL CLEAN-UP AND MITIGATION OF DAMAGE . . . 68
  A. Overview 68
  B. Types of Costs 69
  C. Magnitude of Costs 72
  D. Analysis of Data 74
    1. Railroads 75
    2. Water Carriers 77
    3. Motor Carriers 77
    4. Summary of All Modes 85
    5. Responsibility for Costs 85

CONTENTS (cont.)

Page

VI. ADEQUACY OF EXISTING INSURANCE COVERAGE AND NON-INSURED FINANCIAL RESPONSIBILITY OF TRANSPORTERS 88
- A. Approach to this Topic 91
- B. Modal Analysis 91
  - 1. Railroads 91
    - a. General 91
    - b. Large Railroads 92
    - c. Short-Line Railroads 92
    - d. Adequacy Conclusion 93
  - 2. Water Carriers 99
    - a. General 96
    - b. Protection and Indemnity Coverage (Marine) 96
    - c. Coverage for Injury and Death 97
    - d. Adequacy Conclusion 98
  - 3. Motor Carriers 99
    - a. General 99
    - b. Hazardous Waste Haulers 100
    - c. Other Hazardous Materials Motor Carriers . 103
    - d. Adequacy Conclusion 104
- C. Summation, Overview 106
  - 1. Summation in Brief 106
  - 2. Overview 109

VII. FINANCIAL RESPONSIBILITY STANDARDS, CONTROL OPTIONS AND THEIR IMPLICATIONS 110
- A. Are Standards Necessary? 110
- B. Inadequacy of Present Standards 113
  - 1. Railroads 113
  - 2. Water Carriers 115
  - 3. Motor Carriers 117

CONTENTS (cont.)

Page

C. Standards for Hazardous Wastes or Hazardous Materials 120

D. Standards for Transporters, Shippers or Consignees 121

E. Other Policy Issues Related to Standards 123

- 1. Limiting Liability 123
- 2. Economic Effects of Increased Standards . . . 128
- 3. Mechanisms for Impact Equalization and Full Public Protection 129
- 4. Role for Federal-Insurance Industry Cooperation 131

F. Summing Up 134

APPENDICES

A - Excerpt from Title 46 - Shipping - Chapter IV - Federal Maritime Commission - Part 543 - FINANCIAL RESPONSIBILITY FOR OIL POLLUTION ALASKA PIPELINE

B - Excerpt from Title 46 - Shipping - Chapter IV - Federal Maritime Commission - Part 542 - FINANCIAL RESPONSIBILITY FOR WATER POLLUTION

C - Excerpt from General Order No. 40 - Federal Maritime Commission - August 28, 1978

D - Specimen - Railroad Comprehensive Liability - Policy

E - Unit Costs Employed for Calculations of Spill "Clean-Up" Costs

    A - Major Hazardous Substances "Clean-Up"

    B - Other "Clean-Up" Costs

F - Highlights of Proposed Legislation and Rules to Create a "Superfund" and Establish Minimum Amounts of Financial Responsibility

G - Partial List of Persons and Organizations Contacted

FIGURES

FIGURES **Page**

1 - State Regulations, Financial Responsibility of Motor Carriers 24

2 - Water Quality Insurance Syndicate (WQIS) Premia for Indicated Coverages 53

3 - Summary of Survey of Insurance Practices for Water Carriers. 59

4 - Conversion for Split Limits to Combined Single Limit 61

5 - Relationship of Insurance Costs to Measures of Company Operation 64

6 - Summary of Insurance Coverage for Hazardous Waste Motor Carriers and Motor Carriers of Other Hazardous Materials 67

TABLES

TABLES | Page

1 - Distribution of Hazardous Commodity Spills by RAILROAD Arrayed by Hazardous Material 76

2 - Estimated Costs of Spill "Clean-Up" in Excess of $1 Million Per Accident, For a Sample of Accidental Spills by RAILROAD and Hazardous Commodities Spilled 78

3 - Deaths and Injuries Resulting From Hazardous Commodity Spills of All Modes of Transportation . . 79

4 - Distribution of Hazardous Commodity Spills by WATER CARRIER Arrayed by Hazardous Material . . 80

5 - Estimated Costs of Spill "Clean-Up" in Excess of $1 Million Per Accident, For a Sample of Accidental Spills by WATER CARRIER and Hazardous Commodities Spilled 81

6 - Distribution of Hazardous Commodity Spills by MOTOR CARRIER Arrayed by Hazardous Material 83

7 - Estimated Costs of Spill "Clean-Up" in Excess of $1 Million Per Accident, For a Sample of Accidental Spills by MOTOR CARRIERS and Hazardous Commodities Spilled 84

8 - Distribution of Hazardous Commodity Spills by RAIL, MOTOR and WATER TRANSPORTATION Arrayed by Hazardous Material 86

9 - Operating Income and Shareholders Equity of Short-Line Railroads 94

10 - 1976 and 1977 Operating Income and Shareholders Equity for Motor Carriers Hauling Hazardous Wastes 101

11 - SUMMARY/HIGHLIGHTS Relative Adequacy of Financial Responsibility Coverage All Modes of Hazardous Waste Transport 107

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I. INTRODUCTION

A. Objectives

Pursuant to Section 3003 of the Resource Conservation and Recovery Act (RCRA) of 1976 (P.L. 93-580), EPA is required to promulgate rules to establish standards for transporters of hazardous wastes. Such standards may reasonably include minimum coverages for financial responsibility of carriers to defray the costs of accidental spills "clean-up" [1/] and the damages inflicted upon the environment.

To permit EPA an objective examination of the regulatory needs, if any, in the area of transporters' financial responsibility, this study was undertaken with the following principal objectives:

- Identify current financial responsibility requirements of the Federal and State governments for transporters of hazardous materials and hazardous wastes; also, identify, analyze and reflect major legislative and regulatory proposals introduced or pending as of the time this study was being completed;
- Determine current insurance availability, coverage and costs for transporters of hazardous materials and wastes by mode and by size of carrier;

[1/] "Clean-up" in this report is defined to mean any and all damages, removal, repair or mitigation thereof, including compensation payable to persons for injury or wrongful death, caused by an accidental spill of a hazardous substance while such substance is in the custody of a private or common carrier by water, railroad, or highway.

- Determine typical "clean-up" costs for mitigation of damages to human health (including third party claims) and the environment caused by transporters' accidental spills for each mode;
- Identify the adequacy, or inadequacy, of current financial responsibility practices of carriers, both in terms of self-insurance and purchased insurance to cover costs of spill "clean-up";
- Examine alternatives for adequate levels of financial responsibility to be required of each mode transporting hazardous wastes if current insurance practices and/or requirements are not sufficient to cover the cost of spill "clean-up," and analyze the economic impacts on the carrier of requiring such levels of financial responsibility.

B. Limits of Analysis

1. Transporters' Insurance Practices

Some difficulties were encountered in obtaining information on the insurance practices of transporters of hazardous materials and wastes. Railroads' financial responsibility requirements are not regulated by the ICC; hence, railroad personnel consider their insurance practices as confidential and were largely unwilling to release any information. Railroads' reports in the public domain do not reveal any useful information on insurance practices. However, reliable information was obtained from the casualty insurance industry, leading brokers and agents. Also, some useful information was furnished by a senior official of the Association of American Railroads.

2. Cost of Spill Clean-Up

Cost estimates were partially derived by abstracting data from the Hazardous Materials Incidents (HMI) reports required to be filed by carriers with DOT's Office of Hazardous Materials Operations. Even though the HMI reports are the best information source for cost data, they do present some limitations. First, they include little information on specific damages caused; second, personal injuries and deaths are not cost quantified; third, costs sustained by public agencies are not included; and finally, and just as important, the HMI cost estimates include only short-term injuries occurring at the time of the spill and shortly thereafter; long term damages to the environment or to persons which may surface after a passage of time are not reported.

To the extent feasible, the HMI data were supplemented by information contained in the U. S. Coast Guard's Pollution Incidents In and Around U. S. Waters System (PIRS). Further, costs of spill "clean-up" were developed by use of standard cost factors reported in another recently completed study.

3. Adequacy of Present Financial Responsibility Practices

Not withstanding the constraints referred to in 1. above, it is believed that information representing a cross-section of transporters' current insurance practices was assembled and analyzed. However, it is also likely that some exceptions to these representative practices exist. Hence, it should not be assumed that virtually all transporters of hazardous wastes are in fact insured for liability limits in excess of those required by regulation. Some of the "non-representative" practices were specifically noted in Chapters IV and VI; others are bound to prevail in the railroad and water carrier industries. These could not be identified within the framework of this study.

II. SUMMARY OF RESEARCH PERFORMED, FINDINGS AND RECOMMENDATIONS

A. Existing Regulations

Regulations for financial responsibility of transporters of hazardous wastes, as distinct from hazardous materials or substances generally, do not presently exist at either the Federal or state level. Closest in meaning to such regulations are those contained in Title 46, Shipping, of the Code of Federal Regulations, promulgated and administered by the Federal Maritime Commission (FMC) and which are applicable to carriers by water. These regulations, authorized by the Federal Water Pollution Control Act, the Clean Water Act, and the Trans-Alaska Pipeline Authorization Act, require carriers subject to FMC regulations to obtain Certificates of Financial Responsibility based on acceptable surety to compensate or pay for damages caused to the public health or welfare including fish and wildlife, and shorelines and beaches.

Insurance requirements for carriers by railroad do not presently exist. Motor carriers operating in interstate commerce pursuant to grants of authority issued by the Interstate Commerce Commission are required to meet the surety standards set by that agency. No differentiation for carriers of hazardous materials is contained in the ICC's regulations and the maximum surety required is only $300,000. 1/

1/ For passenger carriers the insurance requirement is $500,000.

Most of the States have promulgated regulations for water carriers. These regulations either dwarf those of the ICC or contain even lesser requirements. There are some exceptions with a few States requiring surety at somewhat higher limits. Self-insurance is permitted by the Federal and State agencies so long as carriers subject to their regulations have adequate financial resources to meet self-insurance requirements.

Some contradictory decisions in ICC proceedings have raised doubts on the applicability of the agency's regulations to waste transporters. While transportation of nuclear waste is clearly exempt from ICC regulations but controlled by the NRC's regulations, the view is held that all other hazardous wastes transportation in interstate commerce is required to comply with prevailing ICC insurance standards.

B. Current Insurance Practices

The stratified sample surveys conducted by the Contractor of transporters by motor vehicles and vessels have revealed that practically all of the larger enterprises are able to and do in fact obtain commercial insurance coverage for comprehensive third party liability at limits far in excess of those prescribed by regulations. In terms of public protection for damages caused by accidental spills, the voluntary practices of carriers are greatly more meaningful than regulatory compliance. Corporate risk managers are keenly aware of their potentially large exposures and in spite of the considerable insurance premium costs have mostly elected to safeguard their firms' viability in the event of costly accidents through purchased insurance. Risk sharing through self-insurance or retained portions of their potential liabilities for costs of "clean-up" is a common practice; the size of the retained portion is typically in proportion to the commercial insurance coverage. Ratios of one to ten have been observed, for the self-insurance or deductible relative to the commercial coverage purchased.

Smaller motor carrier entities revealed their inability to purchase excess liability coverages at levels similar to those of the larger firms. Such inability is reportedly due to some non-availability of insurance and/or non-affordability of the high premiums demanded by underwriters. Low levels of commercial coverage were observed in particular as common practice of special hazardous waste haulers, usually small family-owned operators.

Railroads' practices are also distinctly different for the large Class I segment and the smaller short-line 'roads. The large carriers, mindful of their very large risk exposure and able to obtain, in spite of it, very high excess coverage, are insuring for up to $50 million in damages, with about one tenth thereof self-retained. Short-lines are mainly limited to a $2 million comprehensive liability package with deductibles in the $25,000 to $200,000 range. While a few of the lesser known insurance companies, specifically the so called non-admitted issuers, are providing the noted coverage for the small railroads, most of the coverages for the Class I carriers are written in the London insurance market.

The common view among railroad risk managers is that given the availability of additional coverage at affordable rates they would prefer to layer their existing insurance with additional protection.

A unique vehicle for water carriers was established by a syndicate of twenty-eight domestic insurance companies specializing in marine insurance. Their Water Quality Insurance Syndicate (WQIS) underwrites specifically the cost of spill "clean-up" at the limits prescribed in FMC regulations. However, no indemnity is provided for bodily injury. That type of coverage continues to be purchased by water carriers under their traditional marine protection and indemnity insurances.

Overall, extensive contacts with insurance company representatives revealed the liability insurance of transporters to be an unprofitable line. In spite of sharply increased premium rates, it was reported that virtually all participating underwriters are incurring underwriting losses, causing some of the industry members to withdraw from this market. Domestic companies' withdrawal from insurance of large railroads was attribute mainly to that industry's poor plant physical condition.

C. Cost of Spill Clean-Up

Extensive efforts were undertaken to obtain a representative sample of spill "clean-up" costs. As noted in Chapter I, the body of available data is not believed to be reliable or sufficiently comprehensive to serve the purposes and objectives of this study. Department of Transportation reports contain merely the information furnished by the spill-causing transporter without supplementation by costs borne by public agencies which bear costs for such services as evacuation, fire fighting and prevention, emergency medical services, and the mobilization of clean-up or damage mitigating forces.

To provide as valid a set of estimates as practicable, cohort measures were developed and quantified. HMI and Coast Guard reports for an 18-month period were assembled and analyzed. Empirical data developed were summarized by frequency distribution in cost brackets ranging from under $1,000 per incident to over $1 million. Costs identified included, as applicable, expenditures and compensation related to bodily injury and death, property and environmental damage, removal containment and disposal of hazardous substances, and evacuation of endangered persons. A total of 648 spills caused by the three modes of transport were included in this study. These caused a total of 70 deaths and 1,364 injuries.

The developed cost estimates, covering short-term damages only, indicated that in 85% of all sampled incidents costs were less than $100,000 per incident, in 11.6% of the cases costs ranged from $100,000 to $1 million, and in 22 cases or 3.4% of the sample, costs exceeded $1 million per spill.

D. Adequacy of Existing Coverage

Empirical and judgmental evaluations were developed for each mode and size components within each. The large railroads were judged to be adequately insured for practically all eventualities; for the smaller railroads a mainly contrary view was expressed. In respect of railroads' self-retained risks, a generally cautious note was expressed due to financial failures of some carriers in the recent past and the shaky financial condition of others.

The practices espoused by maritime carriers, combining insurance coverage made available by WQIS and the Property & Indemnity (P & I) Marine policies routinely purchased are entirely adequate public protection even for the most severe catastrophic incidents quantified.

Specialized hazardous waste motor carriers were found to be significantly underinsured and not possessing internal financial measures to assure a hold harmless condition even in the event of minor spills. A direct correspondence between carrier size and financial responsibility was found to exist. Smaller carriers generally are often limited to purchased insurance at the prescribed inadequate limits while the large entities' voluntary practices are, if anything, excessive for all but the catastrophic incidents of proportions experienced in the past only by railroads and water carriers.

E. Need for Standards, Control Options

The conclusion was reached that significantly higher than existing surety requirements are required for adequate public protection for railroads and motor carriers. To minimize regulatory overlap, excesses and costly enforcement procedures, our recommendations include for EPA to confer its authority, if at all possible, upon DOT regulators so that essentially the same protection would be available for the perils resulting from hazardous waste and other hazardous materials transportation. DOT's declaration of hazardous wastes to be hazardous materials, by definition, corroborates this approach.

Further, the view was expressed that while transporters should properly be held responsible for spill "clean-up" costs, regulations should not preclude generators or disposers from assuming the liability through the mechanism of hold harmless agreements. Such transfer holds the promise of increasing insurance availability and reducing costs for the smaller transporter entities.

Other issues addressed include the possibility of limiting liability for "clean-up" costs to some finite sum, similar to the provisions in the Price Anderson Act. Economic impacts of recommended standards coupled with limits on carriers' liabilities were judged, on average, to be mostly insignificant. Increased premium costs which might be incurred by transporters as a result of higher insurance requirements, would be a relatively small additional operating cost. Further, such "would-be" additional premium costs might be more than offset by insurance rate reductions made available to insureds with adequate or superior accident prevention programs. It was also observed that opportunities exist for increased Federal government and insurance industry cooperation with a probable effect of retaining more of the insurance coverages and premia within the domestic economy, while reducing costs to assureds, and in turn, the general public.

Finally, various prior and current legislative and regulatory initiatives were documented, analyzed and commented on. Of most direct interest and broadest applicability is EPA's legislative proposal for a "Superfund" to assure the availability of financial resources to implement spill "clean-up" for practically all eventualities.

F. Recommendations

Standards for financial responsibility of transporters of hazardous wastes in particular and hazardous substances in general should be established for those transport modes for which standards do not now exist, the railroads, and increased for motor carriers.

Innovation in the area of standards for financial responsibility of transporters should be integrated with and included in any novel legislation contemplated to establish a Federal fund for "clean-up" expenses not available from other sources.

While existing legislation under several Acts, including RCRA, provide EPA with considerable latitude for promulgation of financial responsibility standards, these would have to be restricted to transporters of hazardous wastes. Because of the largely common needs for public protection for the effects of transportation accidents of any and all hazardous substances, whether wastes or not, it is recommended to seek novel legislation to encompass all transport modes, all hazardous substances, and a single financial mechanism for the compensation of damaged parties, private and public, to the extent adequate compensation is not available otherwise.

Finally, it is recommended to assure the future uniformity of regulatory administration and enforcement by selecting one lead agency for that purpose, rather than permitting segmentation of these functions for the different modes and the different hazardous products. The legislation contemplated for the establishment of a "Superfund" should also encompass the delegation of existing and necessary new authorities to a single Federal agency.

The benefits to be derived from uniform rules and regulations can be expected to include greater availability of insurance coverage by domestic insurers of all transport modes, with lower premium costs, on average, and greater premium retention in the domestic insurance markets. Previous EPA initiatives for single agency regulation in the hazardous materials transportation field are recommended to be expanded to include the various facets of financial responsibility dealt with in this report.

III. FEDERAL and STATE REGULATIONS on FINANCIAL RESPONSIBILITY of TRANSPORTERS of HAZARDOUS WASTE.

A. Overview

In this phase of the project the contractor was required to identify and analyze existing Federal and state regulations on financial responsibility requirements for transporters of hazardous wastes. The purpose of this investigation is to establish the basis of the existing requirements so that eventually these might be compared with what will be determined as reasonable requirements consistent with the sums at risk.

As will be noted from the information contained in this chapter of this report, there are no existing minimum financial responsibility requirements specifically for transporters of hazardous wastes. Moreover, only a few regulations are in force at the Federal and state levels with specific application to transporters of hazardous materials. Except for these instances, the transporters of hazardous wastes are governed by the regulations applying to transporters of general commodities. Thus, any minimum insurance requirements specified in this chapter apply to hazardous waste haulers.

B. Railroads

There are no Federal or state regulations applicable to common carriers by railroad. Specific inquiries with Federal agencies which are the most likely agencies to be considered with the lack of regulations in this area and which would also be the logical promulgators of regulations for railroads, have confirmed the validity of this statement. Further, the ICC holds the view that railroads, due to their size and financial capabilities do not require regulations in this area, as do, for example, motor carriers. In addition, the fact that railroads operate on their own tracks, as distinct from a motor carrier operating on public highways, has in the ICC's view obviated the need for financial responsibility regulations.

The Federal Railroad Administration, U.S. Department of Transportation, to which all railroad safety regulations were assigned upon the establishment of this agency, concurs with the view expressed by the ICC.

The National Transportation Safety Board, the independent agency required to investigate all railroad accidents causing third party damage and/or injury, has only limited rule making authority. Prescription of financial responsibility requirements is not within NTSB's purview.

The states generally do not regulate the activities of railroads. There are some exceptions, however, these do not embrace the financial responsibility of railroads. The public service or commerce commissions in the various states contacted expressed views which parallel those expressed by the ICC.

It is appropriate to comment here that the view that the nation's railroads are all so large as to possess assets far in excess of any reasonable financial responsibility requirements is patently wrong. First, just during the last several years many large railroads, the so called Class I carriers, have declared bankruptcy. That is to say, their liabilities have exceeded their assets. Second, there is a growing number of smaller common carriers by railroad, the so called Shortline or Class II railroads, some of which have smaller asset bases than major motor carriers. It follows that the absence of regulations in reliance on the financial capacity of railroads is at least in part inappropriate. At this point we have not determined if Federal and/or state regulations are essential to protect the public interest. We shall address this topic in a later chapter of this report.

C. Carriers by Water

1. Federal Regulations

The ICC regulates domestic commerce by water and the Federal Maritime Commission (FMC) regulates foreign commerce by water. Most carriage by water in domestic commerce is exempt from economic regulations, similar to the movement of raw agricultural products in bulk by highway. The ICC's regulations of common carriers by water do not include any regulations establishing minimum insurance or surety requirements.

The FMC, however, has promulgated quite extensive regulations for carriers by water subject to this agency's surveillance. These regulations are contained in Title 46, Shipping, Subchapter B - Regulations Affecting Maritime

Carriers, Part 542. These regulations were first promulgated pursuant to section 311 of the Federal Water Pollution Control Act. With the amendment of this Act by the Clean Water Act of 1977, P.L. 95-217, FMC's regulations have been similarly amended (FMC Docket No. 78-9). In addition, financial responsibility regulations for maritime carriers were published in Part 543 of Title 46 in compliance with subsection (c) of section 204 of the Trans-Alaska Pipeline Authorization Act (P.L. 93-153, 87 Stat. 584, et. seq.).

The new Part 543 regulations which became effective by final rule on July 26, 1977, apply to all operators of vessels carrying oil transported through the Trans-Alaska pipeline. The Part 542 regulations apply to all vessels using any port or place in the United States or the navigable waters of the United States except (1) vessels which are 300 gross tons or less, (2) non-self propelled barges which do not carry oil or hazardous substances as cargo or fuel, and (3) public vessels.[1/] It is evident that the Part 542 applicability criterion applies also to vessels whose operations are in other respects not subject to FMC's economic regulations, i.e., vessels engaged in domestic commerce.

[1/] Public vessels are vessels not engaged in commerce, the operator of which is the U. S. Government or the government of a foreign nation.

The provisions under the two Parts have both common and diverse elements. Both require all vessel operators to obtain Certificates of Financial Responsibility; both permit self-insurance. The methods for establishing evidence of financial responsibility can be anyone or a combination of the following: a. insurance (by filing a prescribed form executed by an insurance company acceptable to the agency), b. surety bond (issued by a surety company approved by the Department of the Treasury), c. qualification as a self-insurer, d. guarantee, e. any other method specially justified and acceptable to the Commission.

The before cited subsection of the Trans-Alaska Pipeline Act requires that financial responsibility for $14 million be demonstrated before oil may be loaded aboard a vessel. Thus, FMC's regulations merely stated the statutory minimum requirement in its §543.5 and went on to define the requirements for self-insurers in §543.6 (a)(3).

In the Part 542 regulations it is first pointed out that they are in addition to those contained in Part 543 (see §542.8) and then determines a minimum requirement of $150 per gross ton of the vessel or $250,000, whichever is greater. Importantly, these regulations define "hazardous substances" as those designated by EPA pursuant to Section 311(b) of the Federal Water Pollution Control Act. Any hazardous "wastes" appearing on the EPA lists would be included. FMC explains in its definitions item that these are substances, other than oil, which generally, when discharged, may present an imminent and substantial danger to the public health or welfare including, but not limited to, fish, shell fish, wildlife, shorelines and beaches.

EPA's final rules, under Title 40, Chapter 1, Sub-chapter D (Water Programs), Parts 117 and 118, as published in the Federal Register of March 13, 1978, Part II, Vol. 43, No. 40, have been suspended by Federal Court Action (Manufacturing Chemists Association V. Douglas M. Costle, CA No. 78-0578, WD La. August 4, 1978). This action effectively halts, at least temporarily, Federal regulation of clean-up of water carrier spills of hazardous materials other than oil. Consequently, the FMC has withdrawn its financial responsibility requirement for water carriers of EPA designated hazardous substances. The FMC's General Order to this effect is contained in Appendix C.

During the 95th Congress, a proposal was made to amend the Federal Water Pollution Control Act mandating higher levels of financial responsibility for water carriers of oil and hazardous substances. The Senate bill, which did not pass, also would have established carriers' liability compensation to third parties for property damages. It set maximum liability for spill clean-up and third party damages of $300 per gross ton of vessel and carriers would be required to demonstrate financial responsibility in that amount.

Thus, for a typical tank barge the financial responsibility requirement would be about $450,000 and for a Great Lakes tanker of 15,000 GWT, the requirement would be $4.5 million. The proposed legislation specified that transporters are responsible for clean-up of spilled substances, to compensate for damages to personal property, loss of natural resources, loss of income, profits or impairment of earning capacity, and loss of taxes, royalty, rental or revenue by governments.

This legislative proposal also would establish an Oil Spill Liability Fund, to be derived from a 3-cents per barrel fee on oil. At a later date, a fee on hazardous substances would be collected for a Hazardous Substances Liability Fund. Monies from these funds would be used to compensate for spill claims not settled by the spiller, either because the carrier has reached the statutory $300 per ton liability limit or asserts a defense. Only spills caused solely by an act of God, an act of war, third party negligence, or negligence on the part of the U. S. Government would relieve the spiller of liability.

Although this measure was not enacted, it illustrates the approach of some policymakers to the problem of pollution damage caused by hazardous substances. It is significant for EPA purposes that damage to human health was not included in the expanded liability proposal.

2. State Regulations

Several states have had some related regulations for some time. These include Florida, Louisiana, Maryland and New York. None of these, however, have any significance for their requirements are materially less than those prescribed by FMC. The latter, due to their broad statutory basis, are applicable in all states.

It is paradoxical to note that Maryland, for example, requires posting of a bond in the amount of $100 per gross ton of vessel, but if such financial responsibility was already demonstrated to the Federal agency, then this requirement was waived.

Another example worthy of mention is a provision in New York's statute establishing that state's Department of Transportation. The authority to promulgate and publish regulations for financial responsibility of carriers by water is conferred to the Commissioner of Transportation who "has the power to promote safety in the transportation of hazardous materials by issuing regulations." The Commissioner has not availed himself of his vested powers to establish financial responsibility regulations.

D. Motor Carriers of Property

1. Federal Regulations

The ICC regulates financial responsibility requirements of motor carriers of property and wastes engaged in interstate commerce. Applicable regulations are contained in

Title 49, Part 1043 - Surety Bonds and Policies of Insurance. These regulations cover public liability and cargo liability; only the former will be discussed in this section while noting that the ICC's requirements for the latter coverage are limited to $5,000 for cargo carried on any one motor vehicle and $10,000 on the total loss or damage of or to property occurring at one time and in one place.

The minimum amounts of insurance prescribed in §1043.2 are:

a.	bodily injury to or death of one person	$100,000
b.	bodily injury to or death of all persons injured or killed in one accident	$300,000
c.	loss or damage to property of others (excluding cargo) in any one accident	$ 50,000

As acceptable proof of financial responsibility, the ICC accepts:

a. as a self-insurer, if the carrier furnishes an acceptable statement of its financial condition and any other evidence that will establish the ability of such carrier to satisfy its obligations without affecting the stability or permanency of the business of such motor carrier,

b. as an insured, certificates of insurance issued by a corporation or company approved by the Commission,

c. as a guaranteed party, surety bonds issued by an approved surety issuer,

d. other, security or agreements satisfactory to the Commission.

The Commission reserves its rights under §1043.9 to revoke or refuse to accept at any time the surety bond, certificate of insurance, evidence of self-insureds, or other securities and agreements, if in the Commission's judgment such documents or their issuers fail to provide satisfactory or adequate protection for the public.

2. State Regulations

All states, except Vermont [1], require motor carriers of property and wastes to file evidence of insurance with their respectively designated state agencies. That is where the similarities cease. As will be seen from the detailed data contained in Figure 1, the minimum amounts of coverage for bodily injury, death and property damage vary quite substantially. In six states and the District of Columbia, no minima are prescribed. The states in that group are Delaware, Massachusetts, New Hampshire, New Jersey, South Dakota, and Vermont. The remaining 44 states have required minima averaging $37,000 for injury or death to one person and $113,000 for all injuries and deaths in one accident. The minimum average for property damage coverage is $15,000.

1/ The District of Columbia also has no filing requirements.

Figure 1

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED Injury or death - 1 person, $	All injuries or deaths - 1 accident, $	Property Damage, $	Cargo Damage, $	Applicability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
ALABAMA	yes	no	25,000	100,000	10,000	2,000	c,r	no	4,5,9, 10	Code, Title 48, Sec 301. Ala. P.S.C. Notice, 12/27/71
ALASKA	yes	yes	100,000[1/]	300,000	10,000	5,000[2/] per vehicle 10,000 at any 1 time or place	c,r	no	3,4,6	Statutes, 42.10 et seq. 3 ACC, 64.310-64.380
ARIZONA	yes	no	5,000 15,000[3/]	10,000 30,000[3/]	5,000	-	c,r	no	-	Stats:, 40-611 Gen. Order NOS. MU-7, MU-13, Ariz. Corp. Comm.
ARKANSAS	yes	yes	25,000	50,000	50,000	1,000[4/]	c,r	no	7	Stats:, 73-1759 Regs. Rule 13.1, 13.2
CALIFORNIA	yes	yes	100,000	300,000	50,000	5,000 (household goods)	c,r	partial[5/]	4,5	Public Utilities Code, Sec. 3632
			200,000[6/]	600,000[6/]	100,000[6/]					
COLORADO	yes	no	25,000	50,000	5,000	500 1,000[7/]	c,r,p	no[8/]	4,6,7	Stats:, Secs. 40-10-110, 40-12,106, and 40-12-109

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED Injury or death - 1 person, $	All injuries or deaths - 1 accident, $	Property Damage, $	Cargo Damage, $	Appli-cability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
CONNECTICUT	yes	yes	25,000	100,000	10,000	-	c,r	no	4,5,6	Stats:, § 14-29 Regs. § 16-304-05
DELAWARE	yes	no	-	none	-	-	c	no	-	Del. code annotated
DISTRICT OF COLUMBIA	no	-	-	-	-	-	-	-	-	
FLORIDA	yes	no	100,000	300,000	50,000	2,500 (1 vehicle) 5,000 (all losses)	c,r[9/]	partial[9/][10/]	-	Stats. § 323.06 et seq Regs. Rule 25-5.31
GEORGIA	yes	no	25,000 10,000[11/]	100,000 20,000	10,000 5,000	1,000 (1 vehicle) 2,000 (all losses)	Is (intra-state c, r,p need cargo ins. only)	partial[9/]	4,6,7, 8	Code, § 68-509, 68-612 Regs. Rule 25(g)
HAWAII	yes	yes[12/]	25,000	100,000	10,000	up to 1,500 (1 vehicle) 3,000 (all losses)	c,r	no	2,4	Stats. § 271-17 MCB 2, Rules 9.00 - 9.11
IDAHO	yes	no	100,000	300,000	50,000	1,000 (1 vehicle) 2,000 (all losses)	c,r,p	no	4,9,10	Code § 61-804 G.O. No. 126

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED Injury or death - 1 person, $	All injuries or deaths - 1 accident, $	Property Damage, $	Cargo Damage, $	Applicability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
ILLINOIS	yes	yes	20,000	40,000	5,000	1,000[4]	c,r	no	4,7	Rev. Stats: Chap. 95 1/2, 18-701(a)
INDIANA	yes	no	25,000	100,000	10,000	2,500 (1 vehicle) 5,000 (all losses)	c,r[9]	no	4,5,6, 12	Regs. Rule 1
IOWA	yes	no	25,000 100,000[13]	50,000 100,000[13]	10,000 100,000[13]	10,000 (c) 2,000 (r) 5,000 (semi-trailer and tractor)	c,r	no	1,4,7, 13	Code, § 325.26, 327A.5, 327.15
KANSAS	yes	no	25,000	50,000	5,000	1,000	c,r,p	partial[9]	2,4	Stats. 66-1, 128
KENTUCKY	yes	no	10,000	20,000 30,000 (18,000 lbs or more) 30,000[3]	5,000 25,000[3]	5,000 (1 vehicle) 10,000 (all losses)	c,r,p	-	1,3,4, 5	Rev. Stat. 281.655(1)
LOUISIANA	yes	yes (IS only)	10,000	10,000	1,000	6,000 (c only) 3,000	c,r	no	4,6,7 9	Rev. Stats. 45: 163, 45:173

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED Injury or death - 1 person, $	All injuries or deaths - 1 accident, $	Property Damage, $	Cargo Damage, $	Appli-cability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
MAINE	yes	no	20,000	40,000	10,000	2,000[7/] 5,000[4/]	c,r	no	2,4,5 9	Rev. Stats. 35-1560
MARYLAND	yes	yes	15,000 Fleet Rates No. of Vehicles 1 to 5 6 to 10 11 to 25 26 to 50 51 - 100 100 +	30,000 Total Minimum Coverage 75,000 90,000 100,000 120,000 150,000 180,000	5,000	-	c,r,p	no	4	Code, Act. 66 1/2, Secs. 116-149
MASSACHUSETTS	yes	yes	NONE			1,000	c	yes	-	Order, D.P.U. No. 10415(2), Letter from D.P.U. 10/3/62
MICHIGAN	yes	no	100,000	300,000	50,000	sufficient to protect cargo[4/] [2/]	c,r,p	no	2,4,5. 6	Comp. Laws § 479.9
MINNESOTA	yes	no	50,000	200,000	15,000	2,000 - 5,000[7/]	c,r	no	4,5,9	Stats. § 221.141
MISSISSIPPI	yes	no	100,000 10,000[15/]	300,000 20,000[15/]	20,000 10,000[15/]	5,000 - 10,000[7/]	c,r	partial	4,5,8, 9	Code § 21-27-133, 77-7-81 et seq Regs. Rules 13-18

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED Injury or death - 1 person, $	All injuries or deaths - 1 accident, $	Property Damage, $	Cargo Damage, $	Appli-cability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
MISSOURI	yes	yes	50,000	100,000	10,000	2,000 - 12,000[7]	c,r	no	4,5,6, 7	Stats. § 390. 126 Rule 24
MONTANA	yes	no	25,000	100,000	10,000	1,000	c,r,p	partial[17]	4,5,7, 8,9,10	Code § 8-113 Regs. Rules 8 and 11-14, Endorsement MV-2
NEBRASKA	yes	yes	25,000 25,000[6]	50,000 100,000[6]	10,000 10,000[4]	10,000[4]	c,r	yes	4,5,7	Stats. § 75-307 Regs. Chapt. 3, Art. 5, Sec. 1
NEVADA	yes	no	25,000	100,000	10,000	1,000 (1 vehicle) 2,000 (all losses)	c,r	no	4,10	Stats. § 706. 291 Regs. Rule 410
NEW HAMPSHIRE	yes	no	-	none		1,000 - 5,000[7] [4]	c,r	no	4,5,6, 8,9	Rev. Stats: § 375,376
NEW JERSEY	yes	yes	-	limits for household movers only			c,r,p	no	4,6	Stats: § 48:4-40
NEW MEXICO	yes	no	10,000	20,000	5,000	1,000 (1 vehicle) 2,000 (all losses)	c,r,p	no	4,5	Stats: § 64-27-49

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED Injury or death - 1 person, $	All injuries or deaths - 1 accident, $	Property Damage, $	Cargo Damage, $	Appli-cability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
NEW YORK	yes	yes	25,000	100,000	10,000	1,000[2/][4/] (1 vehicle)	c,r	no	4,5,6, 8	Transp. Law § 170, Regs. § 750.1, 855.1 - 855.3
NORTH CAROLINA	yes	yes	10,000	50,000	5,000	1,000[4/]	c,r	no	4,5,6, 7,8,9, 12	State: § 62-261, 62-263, 62-268
NORTH DAKOTA	yes	no	Basic no fault benefit: maximum= $15,000. $150 per week for work loss. $1,000 for burial expenses.	20,000	5,000	1,000	c,r	no	4,5	Code: § 49-18-02, Regs. Rules 22-32, 88
OHIO	yes	IS only	25,000	100,000	10,000	2,000[4/]	c,r	yes	1,4,5, 7,8,12	Code: § 4921.02, 4823.02. 4919. 81 - 4919.83
OKLAHOMA	yes	no	10,000[1/]	25,000	5,000	2,500	c,r	no	4	State: 4705.176 Regs. Rule 18,20(a)
OREGON	yes	IS common carriers only	10,000 1,000[16/]	20,000	10,000	sum fixed by Commission	c,r	partial[9/]	4,5,8, 9	State: 767.215, 767.195, 767.200, 767.025(1)

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED		Property Damage,$	Cargo Damage,$	Applicability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
			Injury or death - 1 person,$	All injuries or deaths - 1 accident,$						
PENNSYLVANIA	yes	yes[4]	25,000	100,000	10,000	10,000[2,4]	c,r	no	2,4,8, 9	State: Title 66 § 1308, 1355, Code: 52, § 29.104(d) 52, § 31.6(c)
RHODE ISLAND	yes	no	25,000	100,000	10,000	2,000	c,r	partial[9]	2,4,6	State: § § 39-12-27; 39-13-8
SOUTH CAROLINA	yes	IS only	10,000	20,000	5,000	1,000 (1 vehicle) 2,000[2,4] (all losses)	c,r	no	4,5,7, 9	Code: § 58-23 - 910, 930, 58-23-50
SOUTH DAKOTA	yes	no	N O N E			1,000	c,r	partial[5]	4,5	State: § 49-28-2
TENNESSEE	yes	no	25,000	100,000	10,000	2,000[7] - 12,000	c,r	no	1,5	Code: 65 § 1512, 1513
TEXAS	yes	yes	25,000	100,000	10,000	1,000[4]	c,r	partial[9]	1,4,8	Motor Transportation Regs. 051.03,12.003, 051.03.13.017
UTAH	yes	IS only	20,000 50,000[18]	40,000 100,000[18]	10,000 50,000[18]	Sum fixed by Commission	c,r,p, c,r	partial[9]	4,7,9, 14	Code § 54-6
VERMONT	–	–	BUSES ONLY			-	-	-	-	-

For legends and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

State	Insurance Certificate Required	Self Insurance Allowed	MINIMUM COVERAGE REQUIRED		Property Damage, $	Cargo Damage, $	Applicability	Interst. Carriers Excluded	Exempt from Regs.	Legal References
			Injury or death – 1 person, $	All injuries or deaths – 1 accident, $						
VIRGINIA	yes	no	100,000	500,000	50,000	10,000[19]	c,r,p	no	1,2,4, 9	Code: § 56-304.6:2
WASHINGTON	yes	. no	25,000	100,000	10,000	-	c,r,	no	2,4,5, 6,7	Wash. Admin. Code § 480-12-127(3)
WEST VIRGINIA	yes	yes	10,000	20,000	5,000	2,000 (1 vehicle) 4,000 (all losses)	c,r,p	no	1,4,6, 10	Regs: Motor Carriers Gen. Order No. 49
WISCONSIN	yes	yes	100,000	300,000	50,000	sum fixed by Commission	c,r	no	4,6,7	Stats: § 194.41 Regs: MUD 2, Rules of the Dept. of Transp. Wisconsin Admin Code HY 30 – Rules of the Dept. of Transportation
WYOMING	yes	no	25,000	50,000	5,000	2,000[2] (1 vehicle) 4,000 (all losses)	c,r	yes	4,5,8	Stats: § 37-137, 37-138 Regs: Chapt I § 26.27, Chapt. II § 1-17

For legend and footnotes, see page 9 of figure.

Figure 1 (continued)

STATE REGULATIONS, FINANCIAL RESPONSIBILITY OF MOTOR CARRIERS

LEGEND

IS = interstate carriers
c = common carriers
r = contract carriers
p = private carriers

EXEMPTIONS - carriers transporting exclusively the below enumerated commodities are exempt from state financial responsibility regulations.

1. petroleum
2. garbage, waste
3. commodities exempt under ICC
4. farm or dairy products
5. freight, operating wholly within city limits
6. the Government
7. weekend autos
8. construction materials
9. forest products
10. mine products
11. junk
12. fertilizer
13. liquid products in 2,000 lbs. tanks or less
14. commodities for which insurance is unobtainable

FOOTNOTES

1. admin. agency has discretion in prescribing coverage
2. exemption available for material of low value
3. minimums for carriers of explosives or inflammables
4. common carriers only
5. ICC exempt carriers must file insurance
6. limits for petroleum products
7. depending on weight of carrier
8. cargo insurance of $2,500
9. no cargo insurance
10. ICC exempt carriers excluded
11. uninsured motorist coverage
12. cargo insurance only
13. liquid transport carriers
14. self-insurers under ICC
15. intercity vehicles with a municipal permit
16. freight forwarders
17. IS common carriers exempt from cargo insurance
18. vehicles with a special transportation permit
19. transporters of commodities in bulk are exempt

The Commonwealth of Virginia has the highest insurance requirements; the coverage required for all injuries and deaths in one accident is $500,000 and exceeds the Federal standard by $200,000. Other limits parallel the ICC's requirements. Next highest with minimum requirements equalling those prescribed by the ICC are California, Florida, Idaho, Michigan, and Wisconsin.

In ten states the minimum coverage required is so low as to result in total liability coverage of $50,000 or less. In New Mexico, for example, the limits are $10,000, $20,000, and $5,000, respectively.

In five states, higher minima apply to carriers of hazardous materials. In Arizona, for example, carriers of explosives and flammables are required to increase their insurance for injury or death to one person from $5,000 to $15,000, and for all injuries and deaths from $10,000 to $30,000. Iowa has special requirements for transporters by highway of liquids; that state's limits are increased to $100,000 compared with $25,000, $50,000, and $10,000, respectively.

The methods employed to establish financial responsibility are largely the same as required under the Federal regulations. Some states do not permit self-insurance. Others exclude interstate carriers from state requirements. Utah has one of the most peculiar provisions exempting from financial responsibility carriers of commodities for which insurance is not obtainable.

It will be noted that we also included in the Figure 1 data the financial responsibility requirements for cargo damage. Generally, the state prescribed limits for cargo damage are lower than for the public liability coverage. Overall, these data serve to document the relatively lax state regulations in this area.

As of the time the underlying research was completed, July 1978, not a single state has passed legislation or published regulations with specific reference to environmental damage. It is noteworthy that several of the snowbelt states have considered and some have in fact prohibited the use of road salt for de-icing due to the alledged environmental damage caused by salt. Yet none of these states have felt it necessary to require motor carriers authorized to operate in and through their states to provide evidence of financial responsibility for the cost of mitigating or repairing environmental damage caused by these carriers' operations within the respective states.

IV. CURRENT INSURANCE PRACTICES OF TRANSPORTERS OF HAZARDOUS WASTE

A. Overview

The Contractor was required to assemble data for each mode of hazardous waste carrier reflecting current insurance practices, their cost, and the extent of self-insurance. The methods employed to meet these workscope requirements included the collecting of pertinent information from a geographically stratified sample of transporters, several major underwriters, and insurance companies, as well as carrier associations. This research task was extended to include information about the coverage which might be available to transporters of hazardous wastes, if broader or specialized insurance coverage were to be desired by these carriers or if it were required by law. It should be remembered, the purpose of this investigation is to determine whether carriers do, in fact, and can secure adequate insurance protection for the potentially high costs of "clean-up" following an accidental spill of hazardous materials or wastes.

Most insurance coverage for third party liability, i.e., the transporters' responsibility to others for damage, injury or death transporters may cause accidentally, is not peculiarly for transporters of hazardous waste; rather the same type of coverage offered by insurance underwriters to carriers of commodities is purchased also by and applies to hazardous waste carriers. As will be noted from the information in this chapter, the insurance coverage afforded carriers by railroad and motor vehicle does not contain specific provisions for cost of spill "clean-up".

Only the water carriers can obtain insurance to specifically defray to the Government the cost of cleaning-up spilled substances. Undoubtedly this is due to the stringent Federal regulations applicable exclusively to carriers by water, as explained in Chapter III, which regulations establish the liability and levy penalties for such mishaps.

B. Current Financial Responsibility Practices

Consistent with the format employed in Chapter III., the discussion in this chapter is also by mode.

1. Railroads in General

It is essential to observe two significant facts at the beginning of this discussion on railroads' insurance practices. First, because railroads' financial responsibility requirements are not regulated or supervised by the ICC, and possibly for other reasons, railroads generally consider any information on this subject as highly confidential matter. Not only were numerous railroad officials we contacted reluctant to discuss this subject, but their referral of our request for information to the highest levels of management confirmed the insurance directors' attitude to the effect that no information would be made available. We might also note that railroads' routine quarterly and annual reports required to be filed with the ICC do not reveal any useful information on railroads' insurance practices. The information contained in these reports commingles insurance costs for insurance of all types, so that it sheds no light on whether a particular railroad is in fact paying premia for third party liability insurance, other than for cargo damage.

Some useful information though was obtained from a senior executive of the Association of American Railroads. This cooperative individual chairs an industry committee specifically organized to deal with insurance problems affecting the nation's large railroads. The information obtained from this source is incorporated with that obtained from insurance company and agency representatives.

The second matter to be noted at this juncture is the fact that not all the nation's railroads follow a common path or that they should be understood as one single homogenous industry, with most, if not all, industry members following the same practices. It is proper to say, based on the information obtained from the various sources contacted, that for financial responsibility or third party insurance purposes, the railroad industry consists of at least two classes. The ICC designated Class I railroads are companies with annual revenues in excess of $5 million. Class II railroads, those with annual revenues less than $5 million, are generally short line hauls, terminal and switch railroads. Another way of classifying the railroad industry for purposes of this analysis is to differentiate between the members of the Association of American Railroads and those which belong to the American Short Line Railroad Association.

Information pertaining to the practices of the smaller railroads was obtained mainly from insurance professionals specializing in the particular areas of risk assessment and insurance coverage for these transporters. Our summation of the quite extensive body of information obtained follows in the next subsection of this chapter.

a. Small Railroads (short line, terminal, and switch carriers)

For the past five to eight years, these carriers have been able to purchase insurance coverage for their entire third party liabilities mainly from two domestic insurers. These two insurers, Midland Insurance Company and California Union have developed similar comprehensive liability policies, tailored specifically to the needs of smaller railroads. A sample Midland policy, exclusive of the cover pages, is contained in the enclosed Appendix D. Particular attention is drawn to the following: item iv. contains an excess clause; that means, only a net loss in excess of a sum specified shall be paid by the insurer in behalf of the assured. Also, the exclusion clause is of special interest. It is presented as Form L6481 and Endorsement, Exclusion (Contamination or Pollution). This exclusion pertains specifically to bodily injury or property damage arising out of the discharge, release, etc. of hazardous materials, including wastes. However, this exclusion is not applicable when such discharge is sudden or accidental. Put simply, this policy does not offer indemnification for the cost of spill "clean-up" unless such spill occurred suddenly or accidentally.

It has been the practice to write this type of policy for a coverage limit of up to $2 million per occurrence with a deductible of $25,000 or more. The contractor found only a few short line companies with third party liability insurance in excess of $2 million. In other words, the smaller railroads have self-insured themselves for at least the first $25,000 of damage for which they are ultimately held liable, and they have purchased insurance for a total risk exposure of up to $2 million less the sum retained. This coverage can also be extended if so desired by the assured and if the insurer agrees to include Federal Employer's Liability (FEL), and rolling stock insurance. The latter coverage, though unrelated to the matters pertinent to this study, reflects a "tailor made" condition which is particularly important to these smaller railroads because they handle mostly rolling stock which is the property of others. Hence, these railroads have a continuing and often large exposure to a third party liability involving specifically the rolling stock owned by shippers and other railroads.

More generally, the exposure to third party liability by small railroads can be judged to be as great as that of the large railroads. The difference is merely in terms of the size of the railroad system over which this exposure occurs. On a per occurrence basis, though, there is no significant difference. A small terminal or branch-line railroad is likely to move entire trains, possibly somewhat shorter trains than is typical in line-haul, containing hazardous substances or any other commodity. Moreover, two other factors are bound to aggravate their exposure to risk. These are poor track conditions which may lead to more frequent derailments, and operations in populated and highly built-up areas, such as the urban and industrial complexes within and surrounding port cities. The City of Chicago is a perfect example for both of the named factors. Track conditions of the terminal railroad are known to be in bad repair, yet these tracks pass through parts of the City which contain the most intensive industrialization and populated tracts anywhere.

It is not to be assumed that the smaller railroads' managements are unaware of their considerable exposure to risks in excess of their current comprehensive liability coverage. The reasons stated for their relatively small liability coverage, as noted, generally not more than $2 million per occurrence, are (i) the significant cost of this insurance, and (ii) the difficulty and even larger cost in obtaining coverage in larger amounts.

The two insurance companies specializing in this "line" state that they have incurred net underwriting losses in most of the years in which this coverage was written by them. For that reason, they are not only reluctant to increase the limits but are tending towards higher deductibles and increased premium rates.

The premium rating process is specific for each assured. Unlike the practice commonly applied to third party liability insurance for most conventional coverages for which insurance companies establish standard rates for classes of assureds, premia for this comprehensive liability coverage for small railroads are established on a case-by-case basis. Ultimate rating for each assured is largely subjective although a large number of factors are considered by the underwriter. Included among the factors considered are the railroads location, the terrain its tracks transgress, number of grade crossings, claims history, experience of employees, and also the tonnages or carloads of hazardous articles transported. The question: 'What would be the rate difference if a railroad did not handle any hazardous articles?', could not be answered specifically by underwriters. The reason given is that the transportation of hazardous materials is but one of the many factors taken into consideration for rating purposes and that no specific weight is attributed to that factor, as would be the case if a rating formula existed.

In general, as noted before, premia for this comprehensive coverage are high; premium expense accounts for a notable part of carriers' revenue. The ultimately determined rate is mostly expressed as a percentage of gross revenue; in some cases, it is a percentage of gross payrolls.

Rates believed to be typical range from around $3.75 per $100 of gross revenue (3.75%), to as much as $8.00 per $100 of gross revenue. While the latter is believed to be rare and would apply only for transporters by rail with an extremely poor claims record, the median of this range, or about $5.75 to $6.00 per $100 of gross revenue is believed to be the average premium cost.

As noted above, few cases have been observed with excess coverage for more than $2 million of liability. In these cases, the assured retained some sum, $50,000 to $100,000, above the first $2 million. Of course, the first $2 million of coverage also had a retained or deductible sum of at least $25,000 to $50,000. Short line railroads with comprehensive coverage for more than the usual $2 million are paying from $0.81 to $1.00 per $100 of gross revenue per million dollars of that excess coverage or $1.81 per $100 of gross revenue for the additional $1.9 million of insurance coverage above the base of $2.1 million of claims.

On average, railroads purchasing the comprehensive liability coverage discussed above can be expected to have pretax income of between 1% and 3% of gross revenue. It follows that their insurance premia for third party liability insurance equals some multiple of their pretax earnings. Of course, by definition, insurance premia are an operating expense and as such are included in that total operating cost which results in the noted pretax operating income.

b. Large Railroads (Class I Railroads)

The nation's larger railroads have been purchasers of comprehensive liability insurance for a long time. Concommitant with the financial and operational problems experienced by these carriers, their problems with liability insurance coverage have exacerbated. Until 1970 practically all of these railroads were able to obtain the coverage best suited to their individual needs from the Railroad Insurance Underwriters (RIU), an organization of brokers and underwriters backed by treaties with a cross section of the U. S. casualty insurance industry. Due to continuing losses, RIU ceased operations but was succeeded by a similar organization, Railroad Transit Insurance (RTI). It too, however, sustained underwriting losses and ceased operations in 1974.

RIU and RTI issued comprehensive liability policies which, as noted, were "tailor made" for each assured but which followed a number of basic industry standards. Significant among these were the assureds' self-retained portion, ranging from a minimum of $1 million to about $5 million. The excess coverage, provided by the treaty underwriters, was usually written in step-wise policies, with the first of these assuming the risks for the first $10 million of annual claims above the self-retained sum, the second, the next $15 million, and the third, another $15 million or so. [1/] In the aggregate, railroads were thus able to obtain excess coverage in the order of $50 million, or even more, without difficulty and with the bulk of that coverage retained on a pooled basis by the major U. S. casualty companies. These companies were, for the most part, the so called "admitted" insurers, i.e., insurance companies which are registered in practically all states and which have agreed to comply with the laws and regulations applicable to their scope of activities, including rate regulations, in the respective states. These insurers, it might be noted, comprise the twenty-odd companies which underwrite about 95% of the $80 billion casualty business in the U. S., of which about 45%, or an annual premium volume in the area of $36 billion, is

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[1/] This practice is known in the industry as "policy layering".

realized from commercial coverage (as distinct from personal liability for privately owned automobiles, homes, etc.).

Since the time of RTI's demise, the market for railroad's liability insurance has changed quite drastically. While the major admitted companies have removed themselves from the market, some of the non-admitted companies, or so called "surplus lines", Lexington Insurance Company and American International Group, among others, have entered this market. Most importantly, however, these non-admitted companies and the principal brokers have looked increasingly to the London market, predominantly Lloyd's, to either place this coverage directly or to reinsure it there.

The effects of these market changes are not reported to be overly problematical. They are mostly affecting the affordability factor and to a lesser extent the availability factor. These two factors, availability and affordability are, of course, the sine qua non of the matter. The American Insurance Association, one of the two principal insurance industry associations believes there is not presently, nor has there been, a capacity or availability problem. However, as the result of substantial underwriting losses, premia have been increased substantially during the recent past to the point where the premium payers contend absence of affordability.

It would seem that two interrelated phenomena are the culprits responsible, for the described situation. Basically, the decline of the railroad industry's profitability is the fundamental problem. Due to it, railroads have increasingly deferred track maintenance and to some lesser extent also equipment maintenance. These deferrals, in turn, have resulted in less safe operations, a claim mostly denied by industry spokesmen but stressed by members of the insurance industry, and significant increases in the frequency and magnitude of railroad accidents. These interrelated phenomena, the insurance industry asserts, are the causes for claims to be equal to or even in excess of premia, or in industry parlance, a premium-loss ratio of 100% or more.

Members of the U. S. casualty insurance industry concede that if they were to rate railroads' comprehensive liability risk properly, such that a projected premium-loss ratio in the 60% to 70% range would result, premia would have to be exorbitant, and non-affordable. It is not quite clear whether the London underwriters fully share this view and possibly have adopted similar practices, i.e., to raise their direct and reinsurance rates to the levels of the U. S. surplus lines carriers. It is evident, however, that the London market too is generally reluctant to increase its exposure and write coverage for more than

$50 million to $60 million for anyone assured. One reported practice is to base excess coverage on a per train basis with limits in the $5 million to $10 million range.

A committee of members of the Association of American Railroads (AAR) has long wrestled with the problems of availability and affordability. The committee's activities have included a visit with London underwriters with no apparent results. Basically, it appears that senior railroad officials are uneasy about the limits of coverage afforded presently at rates they consider to be excessive or, at least, not affordable. One must wonder though whether a solution to the problem, as seemingly perceived by the railroad industry, is bound to be evolved by the insurance industry rather than the railroads themselves. What apparently are needed are improved track and equipment maintenance to reduce derailment incidence, better signaling to reduce collision incidence, and possibly improved overall risk management.

Generally, Class I railroads today are self insuring for amounts ranging from $1 million to $5 million. They will then purchase commercial insurance policies for limits up to $50 million. As indicated above, some of the underwriters assuming these risks apply it on a per train basis with limits in the $5 million to $10 million range.

Just how much greater insurance companies judge railroad risk exposure with other routinely underwritten risks can be gauged from a single comparison. While large railroads are, as noted before, mostly limited to excess coverage of about $50 million, for which they pay rates in the range of 1.5% to as much as 6% or 7% of revenue, oil drilling rigs, on site in the volatile North Sea are insured for up to $2 billion. An average premium for the rigs' property and liability coverage is in the order of $2.00 per $100 of value with relatively small deductibles. It follows that underwriters consider the potential risk for these enormously expensive oil rigs to be a great deal less than that attending to the nation's major railroads' operations.

2. Water Carriers in General.

As noted above, water carriers are the only transporters with a ready market for insurance specifically to defray the cost to the government of removing a spilled substance. This insurance market is available to water carriers from a syndicate of underwriters, as described below. This organization also writes policies covering third party property damage resulting from a spill of hazardous materials. It does not, however, insure against claims for bodily injury or death. This protection though can be obtained through a regular protection and indemnity policy (marine equivalent of third party liability), offered by the major underwriters.

Typically, a water carrier may pay 2 1/2% of its gross revenues for liability insurance premia. The actual cost will vary from company to company depending upon size of operation and the mix of commodities carried. Insurers will not charge different premia for hazardous "waste" as opposed to other dangerous materials. Carriers by water of hazardous materials adjust their freight rates to account for insurance costs, thus transferring these costs to the shipper. It should be observed that hazardous wastes are transported by water carriers in bulk, mainly tank and hopper barges; such transportation in bulk is from the ICC's economic regulations.

To determine insurance practices for water carriers of hazardous substances, including wastes, the contractor conducted interviews with marine insurance underwriters and brokers, and surveyed a sample of barge companies which routinely handle hazardous materials. Since only approximately one percent of hazardous wastes are carried by water 1/, our random sample, not suprisingly, did not include such transporters. However, since marine underwriters do not distinguish between waste and commodities with economic value, the same insurance would be available to a carrier by waterway transporting waste as would be other barge lines.

1/ Characterization of Hazardous Waste Transportation and Economic Impact Assessment of Hazardous Waste Transportation Regulations, Arthur D. Little, Inc., U. S. Environmental Protection Agency, pre-publication copy.

- a. The Water Quality Insurance Syndicate

Twenty-eight (virtually all) of the American companies specializing in marine insurance have formed a pool, the Water Quality Insurance Syndicate (WQIS), to provide coverage to vessels for liability incurred pursuant to the Federal Water Pollution Control Act (Public Law 92-500). This is the only organization in America indemnifying water carriers for the costs of "clean-up" of spills.

The WQIS provides two basic types of coverage for vessels: Section A indemnifies the carriers for any sums they must pay to the U. S. or any political subdivision for costs of cleaning up a hazardous material spill, including restoration of natural resources damaged. The limit of the vessel liability to the U. S. government for clean-up costs is $125 per gross ton of an inland oil barge, or $125,000, whichever is greater, and for crafts other than inland oil barges, $150 per gross ton of such vessel. If a vessel carries oil or a hazardous substance as cargo, then its maximum liability is $250,000, provided that this sum is greater than $150 per gross ton of the ship. (These limits are contained in Section 311(f)(1) of the Federal Water Pollution Control Act (FWPC, 33 U.S.C. 1321). Section A coverage extends to these statutory maximums. In the case of liability to a State or municipality for clean-up, WQIS will not reimburse the carrier for amounts in excess of the Federal maximums.

The FMC, which promulgated financial responsibility regulations for the water carriers, does not recognize any deductibles for clean-up insurance. Thus, WQIS provides total indemnification for its Section A coverage, with the carrier paying no part of the claim.

In addition to money that the carrier would pay to the government following a spill, the WQIS also pays any costs the carrier incurs for clean-up, provided prior WQIS consent is obtained to the incurrence of that cost by the assured.

Carriers may purchase insurance against liability for pollution damage to property with Section B coverage. This policy covers any amounts carriers must pay as a "consequence of the sudden and accidental discharge, emission, spillage, or leakage upon or into the seas, waters, land or air, of oil, petroleum products, chemicals, or other substances of any kind or nature whatsoever." It does not indemnify the carrier for damages resulting from a spill caused by willful misconduct. This insurance does not apply to damage to the vessel's cargo or other ship property, or to personal injuries or deaths. Carriers who wish protection against liability for personal injuries resulting from pollution must obtain it in their regular protection and indemnity coverage.

WQIS decided not to underwrite liability for personal injuries because spills frequently result from a vessel's collision. In that situation, it is often difficult to determine whether bodily harm to a crew member or other individuals has resulted from the collision or from the spill of the hazardous substances. The injured employee would have to claim from two different insurance companies: the general liability underwriter and the pollution insurer, to have the causation issue resolved. Rather than create this possibility, the WQIS decided to leave personal injury insurance with the traditional liability underwriters. Cargo insurance also poses such a problem, as frequently the owners of the property have their own coverage. Thus, WQIS does not insure cargo.

In addition, this policy does not cover fines, penalties, punitive or exemplary damages. Section B coverage is subject to a minimum deductible of $2,500 for each accident or occurrence, and higher deductibles are available.

For Section A coverage, WQIS premiums range from $.25 per gross registered ton of the insured vessel to $.96 per gross registered ton. Figure 2, specifies the premium for the various categories of vessels.

Figure 2 data are not firm rates, and WQIS will vary the premium depending upon such factors as where the vessel operates, its spill experience, etc.

Figure 2

Water Quality Insurance Syndicate (WQIS) Premia for indicated coverages

Vessels	Premium, in ¢ per gross registered ton
Barges, not carrying oil (insurance covers them in case they cause a spill from another vessel)	25
Barges carrying oil as fuel, less than 10,000 gallons	30
Barges carrying oil as fuel, more than 10,000 gallons	45
Tugs and Twoboats carrying oil as fuel	56 1/4
Self-propelled vessels carrying oil as fuel	45
Tank barges, inland water only	82 1/2
Tank barges, other than inland water only	90
Vessels carrying hazardous substances other than oil	96

WQIS does not disclose its formula for rate determination for Section B coverage. Generally, the premium will vary by type of vessel, the limit of liability the carrier wants for the particular craft, commodities carried, geographic considerations and spill experience. The maximum aggregate liability (total insurance) that WQIS will underwrite on any one vessel is currently $5 million for Section B coverage.

b. Protection and Indemnity Coverage (Marine)

Water carriers can obtain coverage for bodily injury or deaths of crew members and others resulting from a spill in their regular Protection and Indemnity (P & I) policy. Included in the definition of "bodily injury" would be the long-term, latent damage suffered by an employee exposed continuously to hazardous substances. P & I policies containing specific provision for this long term exposure can be obtained to include risk exposure affecting the general public. However, the potential for such risk, the long-term exposure of the public to a hazardous substance is regarded to be remote by the insurance industry. This judgment is based on the fact that most spills occur in moving waters with their flushing action. When such injuries do occur to non-crew members, it would most likely be because a chemical seeped into the water intake system. Since the intake system is normally closed when a spill occurs, this risk is considered to be insignificant.

In addition to this coverage, operators can purchase protection for property damage due to a spill as part of a P & I policy. This policy can be instead of, or in addition to as an excess policy to the WQIS Section B coverage. P & I coverage can be obtained for up to $20 million per vessel; for amounts in excess, American underwriters would probably defer to the London market. Marine carrier officials believe the U. S. insurance industry could not assume a risk as high as $50 million per vessel for spill damages. It is similarly believed by the transporters that the insurance companies would not form a syndicate to provide such coverage, as they have done for spill "clean-up", because WQIS has not proved to be profitable.

The premium rates for P & I marine insurance are expressed as a percentage of dollar coverage, i.e., cents per dollar of coverage. In setting P & I rates, the following factors would be considered: type of vessel, age of vessel, competence of employees, commodities carried, loss history, and geographic area of operation. The Gulf of Mexico and the Inter Coastal Waterway are considered to be very high risk areas.

c. Survey of Water Carriers

The Contractor discussed insurance practices with executives of water carriers transporting such commodities as styrene, petroleum, bilge, caustic soda, agricultural products, fertilizer, limestone, anhydrous ammonia, sulfuric acid, coal tar, molten sulphur, acetone, ketone, and alcohol. These transporters included private companies hauling their own products and barge companies chartering their vessels to others. The companies were selected at random, but an effort was made to obtain geographic diversity and to include carriers of different sizes. Responses to our specific questions regarding insurance coverage are summarized in Figure 3. All but one of the transporters have WQIS Section A coverage. One medium-sized carrier believed the cost of this coverage to be too high and prefers to self-assume the risk. All of the water carriers surveyed have secured Section B coverage. In addition, some companies secured other commercial insurance to supplement WQIS's third party coverage. Only five (5) of the surveyed companies reported to have had accidental spills of hazardous articles within the past decade. All had paid for clean-up with approximate costs ranging from less than $1,000 to $125,000 in one case.

All of these carriers expressed serious concern about the high premiums they were paying for coverage. One concerned barge company official believed the insurance companies, through the WQIS, had reached the uppermost limit of what they were willing to underwrite. Another

Figure 3

SUMMARY OF SURVEY OF INSURANCE PRACTICES FOR WATER CARRIERS

	Small Carriers	Medium Carriers	Large Carriers	Private Carriers hauling own products
WQIS clean-up insurance	all carriers	75% of sample - yes 25% of sample - no	all carriers	all carriers
Third Party Pollution Damage, $ Amount of Coverage	2 - 10 million	5 - 10 million	5 - 20 million	5 million
Annual Premium Range, $	not available	50,000 - 100,000	approx. 50,000	1 million (includes coverage on equipment)
Range of number of spills reported in last ten years by different carriers	none	0 - 1	0 - 3	minor spills only

corporate officer predicted that his organization would cease carrying hazardous materials or would have the shipper assume liability if the law were to require additional coverage, for, as he stated, premium costs were past the carriers' absorption ability. Thus, for the carriers by water of hazardous materials including wastes, the problem of availability is practically nonexistent, but similar to the railroads, affordability is a serious concern.

3. Motor Carriers in General

In addition to the results of our survey of motor carriers, which are described later in this section, some general observations about insurance practices for this mode are in order. These observations emanate from interviews with insurance underwriters and motor carrier executives who have responsibility for the carriers' risk management.

The ICC and nearly every state require motor carriers, including hazardous waste haulers, to demonstrate a minimum amount of financial responsibility as a condition precedent to obtaining an operating permit. (See Chapter III) The carrier can satisfy the ICC requirements, and that of many states, by carrying insurance, posting a bond guaranteeing the payment of all judgments up to the prescribed limits, or by obtaining permission to be a self-insurer. The overwhelming majority of trucking firms meet their legal requirements by purchasing commercial insurance. Indeed, the ICC is very conservative in approving self-insurance plans. According to one estimate, only about 10 motor carriers have been certified for self-insurance by the ICC. Despite this attitude toward total self-insurance, the ICC does not prohibit or restrict any plans of insurance which include large deductibles. The use of deductibles does not negate the insurance company's obligations in the event the carrier becomes insolvent or otherwise unable to pay claims against it. For example, a carrier may have a policy with a $250,000 deductible. If that carrier becomes financially unable to pay claims against it, its insurance company must pay each valid claim up to the limits of the ICC endorsement.1/

The ICC makes the liability of the insurance company absolute as regards claimants regardless of any truckers' individual policy provisions. If a carrier were found liable for damage to a roadside fruit stand, for example, the insurance company would have to pay the claim, even if the amount of damage was within the deductible of its policy. The transporter would then reimburse the insurer. 2/

The third party liability insurance carried by most trucking firms includes three separate limits: A total for bodily injury or death for any one person, a maximum for bodily

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F. C. & S. Bulletins, 1978, Casualty & Surety Section, an Insurance Industry Advisory Publication.
Ibid.

injuries to or death of all persons injured or killed in any one accident, and a limit for loss or damage in any one accident to the property of others, (excluding cargo). Aetna Insurance Company introduced on July 1, 1978, a new "Truckers' Policy", designed especially for commercial motor carriers. This coverage abandons this split limit of liability and uses a "combined single" limit of liability. The company claims that this "one limit" method is easier for the insured to understand and affords the insured a better limit of protection. Figure 4 following shows how a carrier would convert its present limits into Aetna's combined single limit.

The Combined Single Liability (CSL) means that regardless of the number of covered trucks, insureds, claims made or trucks involved in an accident, the maximum for which an insurer is liable for all damages resulting from one accident is the limit shown in the CSL declaration.

A distinction has to be made between owner-operator motor carriers and larger organizations transporting property or wastes for hire. The owner-operator, by definition a single person with his own truck, would ordinarily be covered for liability by the insurance policy of the truckers for whom he hauls. Indeed, from the results of the contractor's survey, it appears that the premium paid by most carriers would be prohibitive for the owner-operator.

Figure 4

Conversion for Split Limits to Combined Single Limit in thousands of dollars

Present Split Limits	Combined Single Limits
100/300/50	350
100/300/100	400
250/500/50	500*
250/500/100	750
250/500/250	750
500/1,000/100	1,000
500/1,000/250	1,500

* This is the minimum required underlying limit for Umbrella Coverage.

In determining what premiums to charge a motor carrier, the insurance companies generally use a "rating plan". Rating factors considered include vehicle size, intensity of usage, commodities carried, radius of operation, loss experience, and competence of employees. Long distance truckers will be subjected to zone ratings, if they operate outside a 200 mile radius of their principal garaging. Underwriters employ 37 metropolitan zones and 11 regional zones.

Another important premium consideration will be whether the truck insured is part of a "fleet". Generally, a fleet is considered to be 10 trucks or more. The insurance industry, based on claim experience, contends that fleets suffer larger and more frequent losses than non-fleets, and hence, fleet coverage is now subject to a surcharge.

Transporters of hazardous waste would most likely pay premia similar to those paid by other carriers of hazardous materials. The physical characteristics of the commodities hauled are considered in insurance rate making. However, the economic value of the cargo is not a significant factor. 1/

a. Survey of Motor Carriers

The Contractor selected geographic and size stratified sample of motor carriers of hazardous materials, including common, contract, and private transporters. Also among the firms surveyed were waste disposal facilities

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1/ Insurance Associates of America and others.

operating their own trucks and carriers hauling wastes exclusively. The companies ranged in size from very small family-owned businesses to large corporations. Materials carried included liquid waste, chemicals, petroleum products, acids, oil sludges, waste oil, drummed cyanide, corrosive lacquer, and battery electrolite. Executives from these organizations were interviewed concerning their insurance coverage and premiums. Without exception, sample included companies have chosen to carry significantly larger coverage than the minimum required by regulation. Premia paid vary greatly by size of carrier and limits of insurance. Figure 5, indicates the relationship of insurance costs to certain measures of company operation.

i. Hazardous Waste Transporters - The survey included 21 carriers of hazardous waste. The particular substances hauled were liquid industrial wastes, spent acids, paint sludges, waste oil, solvents, chemical waste from water treatment facilities, pickling liquor, chemical residues, and oil sludges. The transporters were contract, common, and private carriers. The amount of third party liability insurance carried ranged from $75,000 to $30 million. Eight of the waste carriers exposed the assets of their companies to possible claims by self-insuring in amounts ranging

Figure 5

Relationship of Insurance Costs to Measures of Company Operation

Dollar Amount of General Liability Insurance (millions)	Insurance Cost to Total Oper. Rev. (percent)	Insurance Cost to Power Unit Veh. Mile (cents/mile)	Insurance Cost per Tons Carried (cents/ton)
1 and under	3.3	3.5	89.2
> 1 < 10	2.5	2.9	74.3
10 - 50	2.1	2.3	60.9

Source: Contractor's Survey of Selected Motor Carriers from $500,000 to $2 million. Annual insurance premiums were reported to range from as little as $600 to as much as $137,000, reflecting from 1.5% to about 3% of carriers' gross revenues. Approximately half of these carriers believed that the maximum amount of liability insurance which they could obtain from a commercial underwriter was $2 million. All but two of the companies asserted they would have to raise their transportation rates if they were required to purchase additional insurance. Of the remaining two, one carrier, currently paying only $600 annually for insurance, would absorb the increased cost. The other company said it would cease handling hazardous materials. Four waste haulers reported difficulties obtaining insurance, but had solved their problem either by paying a higher premium or by changing insurance companies. Several carrier spokesmen voiced the opinion that insurance costs were driving the small waste hauler out of business. Another frequent comment was that Federal regulatory agencies should have industry representatives on their staffs or in advisory capacities. One executive complained that the insurance industry was inexperienced in writing coverage for waste hauling.

ii. Non-Waste Transporters - The non-waste haulers carried such materials as vegetable oils, caustic soda, petroleum distillates, plasticizers, toluene acids, alcohols, plastic articles, corrugated boxes, ammonia compounds, poisons, lacquers, resins, and other hazardous substances. These companies also consisted of contract, common, and private carriers. The amount of third party liability insurance carried ranged from $1 million to $50 million. These transporters, on the average, have more coverage than waste haulers. The difference can be attributed mostly to size, waste carriers tending to be smaller firms. Fewer of the non-waste carriers were self-insured for any significant amount. Annual premiums ranged from $12,400 to $650,000 and represented from as little as 0.5% to about 2.5% of annual revenue.

Several non-waste haulers, like some water carriers, expressed concern about their potentially unlimited liability accruing from hazardous materials spills. Also, truckers expressed the view that rising insurance costs are a threat to the future viability of small carriers.

Insurance coverage and premium costs for hazardous waste haulers as compared to those of non-waste haulers are summarized in Figure 6.

Figure 6

Summary of Insurance Coverage for Hazardous Waste

Motor Carriers and Motor Carriers of Other Hazardous Materials

	Hazardous Waste Haulers	Other Hazardous Materials Haulers
Range of Third Party Insurance Coverage, $	$75,000 to $30 million	$1 million to $50 million
Range of Self-Insurance, $	$500,000 to $2 million	$500,000 to $5 million
Range of Annual Premiums, $	$600 to $137,000	$12,400 to $650,000

Source: Contractor's Survey of Selected Motor Carriers

V. COST OF SPILL CLEAN-UP AND MITIGATION OF DAMAGE

A. Overview

In this segment of this study, the Contractor undertook the task of estimating the dollar costs associated with "clean-up" of spills of hazardous substances. The term "clean-up" in the context of this text means any and all costs associated with or pertaining to the mitigation and/or rectification of damage to property, the environment and bodily harm to humans.

This multi-step task involved first the identification of possible financial outlays resulting from any accident, and then the assignment of costs to each of the expenditure types entailed in the mitigation or rectification process. Exhaustive searches of presently existing data revealed that similarly comprehensive "clean-up" costs have not been collected, analyzed, and reported to date. Accordingly, it was necessary to rely on a variety of data sources, since no new original research could be performed within this limited study framework.

For a number of spills, both local and state government agencies responsible for public safety, environmental protection, and community affairs in general were contacted to obtain as much specific information as practicable for spills which occurred within their respective jurisidictions. While not in all cases specifically researched the information sought was available, it was possible to "construct" estimates for the costs of such items as evacuation of potentially affected persons, extra law enforcement efforts, and mitigation of environmental damage by action of public agencies.

Spill incidents selected for analysis and the derivation of cost estimates were chosen from the Hazardous Materials Incidents (HMI) reports required to be filed by transporters with DOT's Office of Hazardous Materials Operations (OHMO). These reports contain useful information on date and place of spill, the carrier and materials involved, but only scant information is given on the damages caused. Personal injuries and deaths are not quantified in cost terms. Also, typically excluded from the information contained in HMI reports are costs sustained by public agencies although these agencies may eventually claim reimbursement from the negligent carrier.

Finally, it should be noted here that the data developed are not to be interpreted to represent anything other than an overview of typical spill "clean-up" costs. As such, these data serve the objectives persued in this study, namely, the identification of costs for which transporters of hazardous wastes are bound to be held responsible. It is unlikely, however, that these data can be or that they should be used for other not herein intended purposes.

B. Types of Cost

When a spill of hazardous substance occurs, the most obvious cost is the loss of the material itself. In the case of hazardous waste, by definition, material of low or without commercial value, these costs can be ignored. Although in this study we examined spills of substances other than wastes, since the purpose is to extrapolate data and apply it to waste, product values were not calculated or included in the reported costs.

Hazardous substances often damage a carrier's truck, vessel, tracks, or other property. However, since this study focuses on damage to the environment, human health, and other third party property, extensive consideration was not given to damage to transportation property.

As noted before, transporters of hazardous substances are required to file a Hazardous Material Incident (HMI) report with the Office of Hazardous Materials Operations, U. S. Department of Transportation, every time a spill occurs. In analyzing these reports for 1977 and the first half of 1978, it was noted that 70 deaths and 1,364 injuries were caused by the accidental discharge of a hazardous material during transport. Not surprisingly, most of the casualites involved carriers' employees. Others frequently injured included fire fighters and other rescue personnel. These statistics suffer from an important limitation, they generally include only short-term injuries occurring at the instance of the spill and shortly thereafter. They do not report long-term damage sustained due to a chemical burn or latent effects which may surface only after the passage of months or years. Empirical data developed by the Contractor in this area of long-term health costs may be regarded as minimal or, at best, as the usual amounts associated with the type of spill.

The elements comprising the costs of injuries and deaths include expenditures for medical treatment, lost time from employment, and judgments in personal injury lawsuits.

Not infrequently, a spilled substance can damage property other than that of the carrier's. This is an important cost for which all modes of transporters can purchase insurance. However, insurance covering damage to the environment is not as easily obtainable and such harm does occur. For instance, a derailment of several railroad cars containing epichlorohydrin occurred January 23, 1978, in Point Pleasant, West Virginia. The substance seeped into the town's water wells, which will have to be replaced. At the time of this report, the West Virginia Public Service Commission estimated that the replacement costs will be between $750,000 and $1,000,000. Hydrologists have not yet located a suitable supply source. The carrier will be required to pay for the eventual alternative water supply.

Public funds are frequently expended to clean up a spill, such as gasoline and other flammable materials, after the city fire department has extinguised a fire. The Coast Guard may clean up oil or other substances from the water when the spiller cannot or will not. Another not uncommon cost is evacuation, which is generally conducted by the state or local police force with the assistance of other public agencies. While evacuated families often stay with relatives, sometimes they are accommodated in public buildings or nearby hotels, motels, or other commercial facilities. All of these types of costs, though never reported in HMI reports, were quantified in the spill "clean-up" cost estimates developed by the Contractor during the course of this study. In addition, figures were developed representing the cost to the carrier when it hires a contractor to remove a spilled substance.

To summarize, the types of costs identified and included in "clean-up" expenditures are:

- bodily injuries and deaths;
- third party property damage;
- mitigation or repair of environmental damage;
- removal, containment, and disposal of the substance; and
- evacuations.

C. Magnitude of Costs

To assign a dollar figure to personal injuries or deaths, a determination of the extent of the injury and some of the socio-economic characteristics of the person(s) killed or injured had to be made. The HMI reports usually provide a brief narrative description of the accident, including the nature of any personal injuries and treatment administered. From this information, an estimate of out-of-pocket medical expenses could be assigned to each accident in the sample. Since most of the persons killed were either carrier employees or rescue personnel, estimates about their age and socio-economic characteristics could also be made. We then developed estimates for a composite figure representing typical recoveries for accidental deaths of persons similar to the hazardous spill victims postulated.

These estimates were based on the informal judgment of a project team member who has had extensive experience in this field as an expert witness in wrongful death and injury cases.

Third party property damages and cost of repair to environmental damage, where such occurred, were reported by the carriers in their HMI reports. While these figures are not readily verifiable, they do represent an acceptable approximation; due to the large number of incidents analyzed, the margin of error was reduced to what are believed to be acceptable estimates. Costs for evacuation and temporary shelter were estimated for each applicable case on the basis of generalized data furnished by selected public agencies at state and local levels.

Empirical data for costs of removal, containment, and disposal of the spilled substances, were most difficult to obtain. The carriers' reporting of these costs as shown in their HMI reports proved to be too unreliable to accept. State and local agencies involved in the clean-up generally do not record such figures, except in the case of catastrophic incidents, and these are relatively rare. The Coast Guard could only provide data on what it expends in responding to spills, but it only cleans up when (a) the spiller is unknown; (b) the spiller's clean-up is inadequate; or (c) the spiller is unable or incapable to effect an acceptable clean-up.

An EPA study entitled "Estimation of the Frequency and Costs Associated with the Clean-Up of Hazardous Material Spills"[1/]

[1/] Arthur D. Little, Inc. report to EPA under Contract No. 81099-30, draft, August, 1978.

provided a methodology for estimating these "clean-up" costs. Basically, the authors of this study divided spills into several categories based on the chemical properties of the substance involved. They surveyed various contractors and State agencies which had participated in spill clean-up and developed a rough dollar per pound/gallon figure for each substance category. Based on consultations with EPA chemists, specifically for the purpose of assigning spill categories to the spilled materials reflected in our sample, the necessary calculations were performed to develop a substance "clean-up" cost figure for each incident.

Finally, an attempt was made to associate each type of "clean-up" cost with one or more specific payer of these costs. Though in most cases examined in detail it was observed that the party first incurring the cost, such as a local police or fire department, intended to seek reimbursement of its expenditures from the responsible transporter, such action is not always implemented, even months after these costs were incurred.

Appendix E contains a listing of unit costs employed for the before mentioned calculations.

D. Analysis of Data

The sample of spills surveyed included 299 spills caused by motor carriers, 147 caused by railroad operations, and 2 by vessels operating in the inland waterways. Of these 448 spills, 400 represent all the spills reported to OHMO involving either bodily injury, death, or both which have occurred during the

18-month period from January 1977 through June 1978. Additionally, 200 spills were studied from the U. S. Coast Guard PIRS System (Polluting Incidents In and Around U. S. Waters) for the 18-month period of January through June 1976 and the full year of 1977 - (1978 data were not yet available). January through June 1976 was selected to have a comparable winter/ spring season similar to the January-June 1978 interval used for the railroad and motor carriers in the HMI reports.

From this sample, spills were grouped by substance and a subsample developed with the ten most frequently occurring substances spilled for each mode. For water carriers, the five most frequently occurring substances spilled were identified. Then the costs, ascertained as described above in subsection C, were calculated for each substance in the subsample.

1. Railroads

Table 1 contains a frequency distribution of spills caused by railroads, arranged by eleven substance groups and five "clean-up" cost parameters. It is shown in this table that one-third of the total number of railroad related spills resulting in death and/or injury involved sulfuric acid; all but two (2) of these incidents had total "clean-up" costs of less than $1,000. In fact, slightly over three-fourths of all railroad related spills had total "clean-up" costs of less than $1,000. Many of these "small spills" were characterized in the HMI narratives as being "leaks" or "splashes" resulting from either a faulty,

Table 1

Distribution of Hazardous Commodity Spills
by RAILROAD
Arrayed by Hazardous Material[1/]

	Hazardous Commodity Spilled	Number of Spills	----------Cost of Spill "Clean-Up" in Dollars---------				
			1 - 999	1,000 - 9,999	10,000 - 99,000	100,000 - 999,999	1 million and over.
1	Sulfuric Acid	49	47	1	1	-	-
2	Hydrocloric Acid	8	7	-	-	-	1
3	Chlorine	7	3	1	2	-	1
4	LPG	7	2	-	1	1	3
5	Anhydrous Ammonia	6	4	1	-	-	1
6	Caustic Soda	5	4	1	-	-	-
7	Phosphoric Acid	4	3	-	-	1	=
8	Hydrofloric Acid	3	3	-	-	-	-
9	Acrylonitrile	3	-	-	-	3	-
10	Sulfur Dioxide	3	3	-	-	-	-
	Total	95	76	4	4	5	6
11	Other	52	36	2	7	5	2
	Grand Total	147	112	6	11	10	8
	Percent of Grand Total	-	76.2	4.1	7.5	6.8	5.4

Source: Hazardous Materials Incidents Reports (HMI), Materials Transportation Bureau, U.S. Department of Transportation.

[1/] Sample of 147 HMI Reports for period January 1977 to June 1978.

worn or broken valve or gasket. Carelessness in securing the dome lid(s) was also a frequent cause of a "leak" or "splash". Three of the eight spills resulting in total "clean-up" costs in excess of $1 million were spills of liquified petroleum gas (LPG). Table 2 reflects "clean-up" costs for each of the eight incidents with costs in excess of $1 million, by type of cost and totals. Railroad related spills accounted for 27 deaths and 622 injuries during the 18-month period studied. Table 3 summarizes the number of deaths and injuries resulting from hazardous commodity spills for each and all modes of transport for the sample studied; that table also contains averages per spill by mode and for all modes.

2. Water Carriers

Data for spills involving water carriers are shown in Table 4. Slightly over 80% of the sample spills involved a petroleum product. Approximately 50% of the total number of spills had total "clean-up" costs of between $10,000 and $100,000. In water carrier related spills, no deaths and only two minor injuries occurred. There were, however, seven spills which incurred "clean-up" costs in excess of $1 million; they are detailed in Table 5.

3. Motor Carriers

The greatest number of death and/or injury related hazardous commodity spills were caused by motor carriers of property. As with railroad related spills, a high percentage

Table 2

Estimated Costs of Spill "Clean-Up" in Excess of $1 Million Per Accident, For a Sample of Accidental Spills by RAILROAD and Hazardous Commodities Spilled

	(1) Hazardous Commodity Spilled	(2) Cost of Death and Injuries	(3) Cost of Evacuation Property Damage and Clean-up	(4) Total Cost	(5) (2) ÷ (4) Percent of Total Costs: Death & Injury	(6) (3) ÷ (4) Percent of Total Costs: Evacuation, Property Damage and Clean-up
		⟵ Thousands of Dollars		⟶		
1	LPG	9,050.0	176	9,226	98.1	1.9
2	Chlorine	4,958.0	1,134	6,092	81.4	18.6
3	LPG	0.5	3,897	3,897	.1	99.9
4	LPG	1,203.0	2,081	3,284	36.6	63.4
5	Anhydrous Ammonia	1,201.0	1,025	2,226	54.0	46.0
6	Hydrocloric Acid	-	1,888	1,888	0.0	100.0
7	Ethylene Dichloride	-	1,696	1,696	0.0	100.0
8	Epichlorohydrin	0.2	1,303	1,303	.1	99.9
	Total	16,412.7	13,200	29,612.7		
	Average	2,051.6	1,650	3,701.6	55.4	44.6

Source: Hazardous Materials Incidents Reports (HMI), Materials Transportation Bureau, U.S. Department of Transportation.

Table 3

Deaths and Injuries Resulting From Hazardous Commodity Spills of All Modes of Transportation[1]

	No. of Spills[2]	No. of Deaths	No. of Deaths Per Spill	Injuries	Injuries Per Spill
Rail	147	27	.18	622	4.23
Water	202	None	None	2	.01
Motor	299	43	.14	740	2.47
Total	648	70	.11	1364	2.10

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[1] Deaths and injuries occurring at the instance of the spill and shortly thereafter.

[2] 18-month study period.

Table 4

Distribution of Hazardous Commodity Spills
by WATER CARRIER
Arrayed by Hazardous Material[1/]

	Hazardous Commodity Spilled	Number of Spills	----------Cost of Spill "Clean-Up" in Dollars----------				
			1 - 999	1,000 - 9,999	10,000 - 99,999	100,000 - 999,999	1 million and over
1	Diesel Fuel	54	1	25	25	3	-
2	Fuel Oil	47	-	13	21	8	5
3	Crude Oil	42	1	10	27	3	1
4	Gasoline	14	1	2	9	2	-
5	Waste Oil	8	-	3	5	-	-
	Total	165	3	53	87	16	6
6	Other	37	1	3	20	12	1
	Grand Total	202	4	56	107	28	7
	Percent of Grand Total	-	2.0	27.7	53.0	13.9	3.5

Source: Data extracted from U. S. Coast Guard PIRS System (Polluting Incidents In And Around U.S. Waters) and Hazardous Materials Incidents Reports (HMI), Materials Transportation Bureau, U.S. Department of Transportation.

[1/] Sample of 200 spills taken from U. S. Coast Guard PIRS System for the periods January 1976 to June 1976 and Full Year 1977, and 2 spills from HMI Reports for Period January 1977 to June 1978.

Table 5

Estimated Costs of Spill "Clean-Up" in Excess of $1 Million Per Accident, For a Sample of Accidental Spills by WATER CARRIERS and Hazardous Commodities Spilled

	(1) Hazardous Commodity Spilled	(2) Cost of Evacuation, Property Damage and Clean-up[1/] Millions of Dollars
1	Crude Oil	80.0
2	Fuel Oil	9.5
3	Fuel Oil	3.5
4	Fuel Oil	2.1
5	Jet Fuel	1.8
6	Fuel Oil	1.4
7	Fuel Oil	1.1
	Total	99.4
	Average	14.2
	Average excluding entry No. 1	3.23

Source: Data extracted from U.S. Coast Guard PIRS System (Polluting Incidents In and Around U.S. Waters)

[1/] Equals total costs.

Note: The seven incidents reflected in this table did not cause any injuries or death. Incident no. 1 pertains to a spill of 9.6 million gallons of crude oil, "clean-up" costs are believed to be greatly overstated due to application of a standard cost per gallon of oil spilled which standard does not properly reflect the "economics of scale" applicable to this type of incident. Accordingly an average excluding this incident was developed and is shown as the last line.

68%, had total "clean-up" costs of less than $1,000 each. Many of these smaller spills caused by leaks or splashes, occurred due to faulty packaging or improper loading of the hazardous commodity. Table 6, to give proper reflection to the large number of incidents, contains a larger number of cost brackets; also this permits analysis as to the cost relationship of "clean-up" with existing ICC financial responsiblity standards. 80% of the total number of spills cost less than $50,000 to "clean-up". 85% cost less than $100,000 and 89% cost less than $300,000. Seven incidents or 2.3% of the 299 motor carrier related spills had total "clean-up" costs in excess of $1 million. Gasoline and sulfuric acid spills occurred with the greatest frequency. As was seen in railroad related spills, a large percentage of sulfuric acid spills (88%) required less than $1,000 to totally "clean-up". Gasoline spills, however, cost considerably more. Approximately three-fourths of the 51 gasoline spills required in excess of $50,000 to "clean-up". Four (4) of the seven (7) motor carrier related hazardous commodity spills costing in excess of $1 million to "clean-up" involved spillage of gasoline. Table 7 summarizes those motor carrier related spills costing in excess of $1 million to "clean-up". Motor carrier related spills accounted for 43 deaths and 740 injuries during the 18-month study period.

Table 6

Distribution of Hazardous Commodity Spills
by MOTOR CARRIER
Arrayed by Hazardous Material[1/]

			-----------Cost of Spill "Clean-Up" in Dollars-----------						
	Hazardous Commodity Spilled	Number of Spills	1-999	1,000-9,999	10,000-49,999	50,000-99,999	100,000-299,999	300,000-999,999	1 million and over
1	Gasoline	51	5	2	7	10	9	14	4
2	Sulfuric Acid	32	28	4					
3	Anhydrous Ammonia	15	3	6				5	1
4	Caustic Soda	13	13						
5	LPG	13	10	1			1	1	
6	Hydrochloric Acid	11	10	1					
7	Fuel Oil	6	5					1	
8	Chlorine	5	4		1				
9	Organic Phosphate	5	4	1					
10	Nitrobenzol	5	5						
	Total	156	87	15	8	10	10	21	5
11	Other	143	116	11	3	5	2	4	2
	Grand Total	299	203	26	11	15	12	25	7
	Percent of Grand Total	-	67.9	8.7	3.7	5.0	4.0	8.4	2.3

Source: Hazardous Materials Incidents Reports (HMI), Materials Transportation Bureau, U.S. Department of Transportation.

1/Sample of 299 HMI Reports for period January 1977 to June 1978.

Table 7

Estimated Costs of Spill "Clean-Up" in Excess of $1 Million Per Accident, For a Sample of Accidental Spills by MOTOR CARRIERS and Hazardous Commodities Spilled

	(1) Hazardous Commodity Spilled	(2) Cost of Death and Injuries	(3) Cost of Evacuation, Property Damage and Clean-up	(4) Total Cost	(5) (2) ÷ (4) Percent of Total Costs: Death & Injury	(6) (3) ÷ (4) Percent of Total Costs: Evacuation, Property Damage and Clean-up
		←	Thousands of Dollars	→		
1	Sodium Sulfhydrate	4,803	-	4,803	100.0	0.0
2	Lacaquer, Paint and Thinner	-	2,000	2,000	0.0	100.0
3	Gasoline	.3	1,358	1,358	.1	99.9
4	Gasoline	1,200	126	1,326	90.5	9.5
5	Gasoline	1,200	108	1,308	91.8	8.2
6	Gasoline	1,200	101	1,301	92.3	7.7
7	Anhydrous Ammonia	600	656	1,256	47.8	52.2
	Total	9,003.3	4,349	13,352		
	Average	1,286	621	1,907	67.4	32.6

Source: Hazardous Materials Incidents Reports (HMI), Materials Transportation Bureau, U.S. Department of Transportaiton.

4. Summary of All Modes

Table 8 consolidates data from the 648 incidents occurring during the 18-month study periods. Sulfuric acid and petroleum products accounted for slightly less than 50% of all hazardous commodity spills. Also, just under one-half of all spills required expenditures of less than $1,000 per incident for "clean-up". Land spills of gaseous substances such as Anhydrous Ammonia, Liquified Petroleum Gas (LPG) and Chlorine tend to cause greater "clean-up" costs due to evacuations and bodily injuries caused by inhalation of the substances. Generally, fire, explosion, and evacuation cause spills of such substances as petroleum products to incur larger expenses for "clean-up".

As shown in Table 3, railroad related hazardous commodity spills accounted for almost twice as many injuries per spill as was the case in motor carrier caused spills. In total, there were slightly over two injuries per spill for all modes of transportation.

5. Responsibility for Costs

The Contractor interviewed several State officials with responsibilities for clean-up of hazardous materials. They indicated that the carrier (or his insurer) generally pays for clean-up costs, except that fire and police departments are not generally reimbursed. This finding corresponds with

Table 8

Distribution of Hazardous Commodity Spills by RAIL, MOTOR and WATER TRANSPORTATION Arrayed by Hazardous Material[1/]

			--------Cost of Spill "Clean-Up" in Dollars----------				
	Hazardous Commodity Spilled	Number of Spills	1 - 999	1,000 - 9,999	10,000 - 99,999	100,000 - 999,999	1 million and over
1	Sulfuric Acid	81	75	5	1	-	-
2	Gasoline	65	6	4	26	25	4
3	Diesel Fuel	57	2	25	26	4	-
4	Fuel Oil	53	5	13	21	9	5
5	Crude Oil	42	1	10	27	3	1
6	Anhydrous Ammonia	22	7	7	1	5	2
7	LPG	21	12	1	2	3	3
8	Hydrocloric Acid	20	17	1	1	-	1
9	Caustic Soda	18	17	1	-	-	-
10	Chlorine	12	7	1	3	-	1
	Total	391	149	68	108	49	17
11	Other	257	170	20	36	26	5
	Grand Total	648	319	88	144	75	22
	Percent of Grand Total	-	49.2	13.6	22.2	11.6	3.4

Sources: Consolidated data from tables 1, 3 and 5.

[1/] Sample of 448 HMI Reports for period January 1977 to June 1978 and 200 spills from U. S. Coast Guard PIRS System for periods January 1976 to June 1976 and Full Year 1977.

the conclusion of another EPA report, "Survey of States in Response to Environmental Emergencies"[1], that report noted that an eleven State survey revealed that industry was cleaning up most spills resulting from transportation incidents. When States do have to clean up, only Florida, Indiana, Maine (oil only), Mississippi, Nebraska, New Jersey, Tennessee, Texas, and Washington (oil only), have contingency funds specifically set up for such purposes.

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[1] Arthur D. Little, report to EPA, under Contract No. 68-01-3857, July, 1978.

VI. ADEQUACY OF EXISTING INSURANCE COVERAGE AND NON-INSURED FINANCIAL RESPONSIBILITY OF TRANSPORTERS

A. Approach to this Topic

What is being dealt with in this chapter of this report is the question of adequacy of present practices, not regulations, of transporters, in relation to their exposures to claims for costs of hazardous articles spills "clean-up". The subject of regulations for financial responsibility will be dealt with in the next chapter.

At this point, it is imperative to first define what can be construed as being a carrier's financial responsibility coverage. Fundamentally, two factors are relevant, namely:

a. the carriers' purchased insurance, and

b. the carriers' self-insurance or retained insurance.

The former is, in the financial sense, some finite quantity. An insurance policy is, of course, a contract pursuant to which the issuer of that contract is obliged to pay, in behalf of the assured, up to a specified sum if and when events described in the policy have occurred. Thus a comprehensive third party liability policy without exclusions for a maximum sum of $10 million, is a contract by the issuer, the insurance carrier, to pay up to that sum to anyone entitled to payment by the assured.

The latter factor, self-insurance or that part of the carriers' potential exposure to payment for damages caused by the carrier and which part is excluded from the purchased insurance coverage, is not some finite quantity, readily lending itself to empirical analysis. This reality is embodied in several interacting principles. The significant ones can be described as (i) the infinite responsibility of any person or business entity to compensate others for damages caused, (ii) the finite financial capability of any person or business entity to provide compensation for damages caused by them.

Taken together, the finite or clearly defined scope of financial capability to pay as contracted for between insurer and assured, and the indefinite magnitude of the sums for which transporters can be held responsible, deserve evaluation in a framework of reasonable expectation. That is to say, the determination or judgement about the adequacy of transporters' present practices must be made with reference to the best available guide of what could reasonably be the magnitude of the carriers' liability. The estimates contained in Chapter V represent what is believed to be an adequate guide.

It will be recalled that data presented in Chapter V reflect wide ranges of spill "clean-up" costs. Further, it should also be remembered that these figures are limited to costs which became known within relatively short time periods after the occurrence of an accidental spill. Hence, these figures do not incorporate costs which may be incurred after the lapse of years, during which in all likelihood the statute of limitation will have expired, when it is determined that before unnoticed environmental damage was caused by the spill of a hazardous substance.

In sum then,it is evident that the framework of reasonable expectation for each segment of the transport industry must be viewed, in comparison with carriers' insurance practices and surety capability, at some point of the exposure range, and the excluded long-term exposure potential. This logic begs the question: 'Which point in the exposure range is the proper one? Is it the average, the upper limit, or possibly some point in between?' Inevitably, to this question there is no correct or incorrect answer. Rather, the answer must of necessity be a well reasoned judgement, reflecting the practical realities of carriers' economic considerations and those of a society in which both enterpreneurs and their beneficiaries, i.e., the consumers of their products and services, have grown accustomed to some risk taking.

Based on our many interviews with carrier risk managers and insurance companies' officials we are mindful of a well reasoned, though empirically imprecise viewpoint. Essentially, what these informed persons are saying is: we are aware of what is our probable exposure to third party claims for damages caused by our operations; we are agreeable to retain that part of this risk which, if called upon to make good, would not jeopardize our viability, and to insure against that part of the risk for which purchased coverage is available to us at an affordable cost. That latter caveat coupled with the rising and declining fortunes of transporters could be reasoned as providing less than adequate comfort from the public's viewpoint. What, however, defuses the public's potential concern is the before noted reality, namely the general public's acceptance of its exposure to risk.

Noting these theories and rationale as the backdrop, the process of comparative modal adequacy analysis will proceed with the following as the framework for reasonable expectations:

a. "Clean-up costs not discerned or known of within a relatively short time period after the spill occurred will not be considered at this time.

b. "Clean-up" costs in excess of those estimated for the 18-month sample shall not be considered as costs within a probable range, even though catastrophic accidents causing virtually hundreds of millions of dollars in damages can occur. These extreme eventualities also are more appropriately dealt with in a later chapter.

c. An arbitrary sum is set as the benchmark separating between catastrophic and other spills; the latter shall be those incurring "clean-up" costs of less than one million dollars, and the former those with cost of one million and more.

B. Modal Analyses

1. Railroads

a. General. Both small and large carriers were shown to pursue a common set of practices. Both retain some portion of their perceived risks and insure the remainder. That is also where their practices cease to be common, probably involuntarily so because availability of commercial insurance varies widely for different sizes of railroads.

b. Large Railroads. Commercial insurance coverage is at liberal levels to compensate for the damages caused as quantified for all sample accidents including those defined as catastrophic spills. Carriers' self-retained portion of their exposure, ranging from $1 million to $10 million, is also adequately covered by their net assets. However, though a typical Class I railroad has stockholders equity in the tens of millions, it would be incorrect to ignore the several recent bankruptcies. Put simply, railroads in bankruptcy continuing to operate under the protection of the bankruptcy laws, are bound to have negative equity positions. Further, it is questionable whether a liability claim would take preference over the claims of other creditors so that for a bankrupt railroad the ability to pay the self-retained portion of a third party liability claim is, to say the least, questionable.

c. Short-Line Railroads. Commercial insurance coverage is ample for all but catastrophic incidents. The $2 million coverage is far in excess of the cost of spill "clean-up" of 14 out of 17 spills caused by short-line railroads during the sample period. The average cost for these 14 spills was less than $2,500. However, the three (3) catastrophic incidents were estimated to have incurred costs averaging $3.7 million, almost twice the amount of commercial insurance available to these railroads.

The self-retained risk ranging from $25,000 to $100,000 is generally well covered by these railroads' equity and operating income positions. As a sample of nine (9) such carriers, depicted in Table 9, reveals their 1977 average equity was $14.4 million and excluding the largest of these railroads, the E. J. & E., the average stockholders equity was $7 million ($7.2 million in 1976) and operating income averaged $5.75 million and $3 million with and without the E. J. & E. respectively ($5.76 million and $3.1 million in 1976).

Here too though there are some dark clouds. Some of these short-line railroads operate at a loss and have negative equity positions. In sum, reliance upon carriers' ability to pay their share of spill "clean-up" costs cannot be deemed as a certainty. The difference between a railroad declared to be bankrupt and one with a negative equity position is merely in the fact that carrier management in the latter situation have somewhat great flexibility in deciding which invoice to pay and which to defer. Ultimately though, a large liability claim not covered by insurance could well cause any marginal carrier to seek the protection of the bankruptcy statutes.

d. Adequacy Conclusion. Within the described framework of analysis, railroads' commercial coverage is found to be adequate. Similarly, railroads' self-insured retention is also mostly well covered by their equity (net worth) positions and net revenues.

Table 9

Operating Income and Shareholders Equity of Short-Line Railroads

(Dollars in Thousands)

Name of Carrier	Total Revenue 1977	Total Revenue 1976	Total Expenses 1977	Total Expenses 1976	Operating Income 1977	Operating Income 1976	Shareholders Equity 1977	Shareholders Equity 1976	Percent Operating Income to Tot. Rev. 1977	Percent Operating Income to Tot. Rev. 1976
1. Elgin, Joliet and Eastern	107,544	101,931	80,334	75,279	27,210	26,651	73,555	69,931	25.30	26.15
2. Indiana Harbor Belt	44,987	43,201	39,990	37,418	4,997	5,783	12,228	14,411	11.11	13.39
3. Terminal RR Assoc. of St. Louis	44,384	41,594	37,966	34,113	6,418	7,481	(1,651)	(1,529)	14.46	17.99
4. Alton and Southern	23,040	21,741	16,208	15,272	6,832	6,469	20,528	20,512	29.65	29.75
5. Atlanta & West Point	9,466	8,309	7,180	6,374	2,286	1,935	7,793	7,616	24.15	23.29
6. Colorado & Wyoming	8,569	8,019	5,115	4,788	3,454	3,231	5,555	5,558	40.31	40.29
7. Atlanta & St. Andrews	7,344	6,632	4,481	4,045	2,863	2,589	9,731	9,117	38.98	39.03
8. Kentucky & Indiana Term.	1,284	862	3,224	2,969	(1,940)	(2,107)	487	452	(151.09)	(244.43)
9. Oregon Pacific & Eastern	453	424	824	645	(371)	(221)	1,292	1,143	(81.90)	(52.12)
TOTALS	247,071	232,715	195,322	180,903	51,749	51,811	129,518	127,211	-	-
AVERAGES	27,452	25,857	21,702	20,100	5,750	5,757	14,391	14,135	20.94	22.26
AVERAGES, Excluding E.J.& E.	17,441	16,348	14,374	13,203	3,067	3,145	6,995	7,160	17.59	19.24

Source: Railroads' Annual Reports.

Concern must be voiced, however, because of the deteriorating financial condition of the railroad industry in general, and a number of railroads specifically. It is possible that an increasingly large number of both Class I and short-line railroads at some future point will no longer possess unencumbered assets to indemnify injured parties by payment of the self-insured portion of "clean-up" costs. While in the context of this study this possibility is a critical conclusion, akin to a finding of inadequacy, it must be viewed in a broader context to avoid painting of an otherwise alarming picture. The broader context referred to is the public's concern with and the imperativeness of a viable railroad industry. The national reliance on this mode of transport is of such proportion that its demise is unthinkable. Federal actions to rescue that segment of the railroad industry which without such action would no longer exist as a provider of public transport services is well documented.

In sum, while it is surely not impossible that some carrier(s) could, at least temporarily, default on its self-retained "clean-up" liabilities, for such an event to occur and continue unrectified is unlikely because of the need for the carriers' continued services. Hence, our conclusion of adequacy of railroads' financial responsibility.

2. Water Carriers

a. General. There are two basic differences between the practices of water carriers and those of the other two modes. These differences are (i) the extensive financial responsibility regulations promulgated by the Federal Maritime Commission (FMC), as described in Chapter III, C., 1, of this report, and (ii) the specific pollution insurance provided by the Water Quality Insurance Syndicate (WQIS), as described in Chapter IV, B., 2., a.

The third party liability insurance provided for carriers by water through the auspices of WQIS is the U. S. insurance industry's direct response to the requirements specified in the FMC regulations. That response fully covers the prescribed insurance limits. As such, this situation is analogous to one where first standards were set by a Federal agency, and then the private sector complied via a newly developed insurance vehicle, the WQIS.

Fundamentally, the question of financial responsibility adequacy is answered by the foregoing statement, except that one may express reservation about the prescribed standards. A discussion of this subject will be found, as before noted, in the report's next chapter.

b. Protection and Indemnity Coverage (Marine). As the name of this insurance coverage implies, it is the marine equivalent of the comprehensive third party liability insurance purchased by the other transport modes. Even though water carriers are not required by regulation to purchase P&I coverage, all do even when they have obtained the insurance offered by WQIS in its part A and B coverage. The combined limits range from $10 million to as much as $20 million per vessel with relatively small self-retained amounts, generally less than $100,000 and in larger sums only in the case of large ocean-going vessels of the types which are most unlikely to transport hazardous wastes.

Comparing this industry segment's insurance protection with its recent spill "clean-up" cost experience, a rather comfortable posture evolves. Of the smaller vessel spills, 94% caused "clean-up" costs of less than $900,000 for each incident, while 71% of the observed spills costs were less than $100,000. Contrary to logical expectation cost of spill "clean-up" caused by larger vessels averaged less than for their smaller counterparts. Of the spills caused by large tankers, defined as self-propelled vessels with 15,000 ton or larger load capacity, 95% caused "clean-up" costs of less than $100,000 per incident. The single largest cost incident observed amounted to $700,000 or less than one-third the pollution damage insurance provided to the spill causing vessel by WQIS, and a small fraction of the $20 million in P&I coverage voluntarily purchased by the vessel's operator.

c. Coverage for Injury and Death. It will be remembered that WQIS does not underwrite coverage for compensation resulting from accidental personal injury or death. Similarly, it is to be recalled that under the provisions of FMC regulations, water carriers' liability for spill "clean-up" costs is limited to the sums required to be insured against. Moreover, such insurance, it was noted, must be obtained from qualified insurers, as distinct from carriers' self-insurance or retention of some portion of the risk.

However, water carriers hauling hazardous articles are, of course, susceptible to causing injury or death to humans. While WQIS has its rationale for refusing to cover this type of risk, water carriers have traditionally and continue to insure themselves for "damage" to humans through the medium of P&I insurance. Carrier managements exhibit a rather conservative attitude by purchasing coverage limits far in excess of identified exposures. Further, their retained risks are usually quite small, averaging only $25,000 per vessel for the large vessels, and as little as $2,500 for inland waterways barges. Notably, some exceptions were documented involving self-insurance for as much as $3 million. Even that latter practice, in contrast with our framework of reasonableness, does not seem out-of-line.

d. Adequacy Conclusion. The two types of insurance coverages purchased by practically all hazardous materials carrying transporters by water are uniquely adequate to meet all reasonably expectable "clean-up" costs. The consistency of FMC required insurance on the one hand, and the coverages provided by WQIS on the other, afford the public total assurance of financial responsibility to the maximum extent required by law.

Carriers' practices in respect to their purchase of P&I marine insurance protect against the risks of personal injury and wrongful death in addition to property damage unrelated to those caused by spills of hazardous substances.

3. Motor Carriers

a. General. Motor carriers are the predominant transporters of hazardous commodities, including wastes. Carriers participating in hazardous materials transportation range from the largest national firms with hundreds of pieces of equipment to very small, family owned local operations with as few as a couple of trucks. These small operators are not only so called speciality haulers, restricting their scope to their specialized equipment's suitabilities, i.e., the transportation of liquid hazardous wastes, but also to small geographic areas, mainly within a single state. That latter characteristic exempts these transporters from compliance with ICC regulations, though they are still responsible for compliance with the regulations of the states in which they operate.

Interestingly, as the profiles in Chapter IV, B, 3, have shown, hazardous materials carriers are quite well insured. These transporters' practices reflect a keen awareness of their exposure to risks and liabilities. That awareness and carriers' intent to avoid the liability potentials to render them financially vulnerable, and possibly cause their operational demise, is best demonstrated by the fact that with only rare exception these transporters insure for sums substantially in excess of regulatory requirements.

b. Hazardous Waste Haulers. Table 10 contains a financial profile of waste hauling motor carriers. From data in that table, it is readily evident that indeed operators of all sizes participate in this segment of the over-the-road transportation business. Yet, it must be emphasized that truckers at the lower end of the size spectrum are not represented in this profile because these operators are not required to file annual and quarterly reports with a public agency.[1] The smallest of the carriers included in the noted table has a 1977 net worth of over $92,000, and operating income of more than half that sum. One larger firm has a negative shareholders equity; however, its substantial 1977 operating income of $146,000 suggests this operator is overcoming the negative posture. At the other end of the spectrum are such as C. W. Transport and Ruan with equities of nearly $16 million and over $12 million, respectively.

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[1] Just a few state regulatory agencies, having jurisdiction over motor carriers authorized to do business in those states, require filings of financial reports.

Table 10

1976 and 1977 Operating Income and Shareholders Equity for Motor Carriers Hauling Hazardous Wastes

Name of Carrier	Total Revenue 1977	Total Revenue 1976	Total Expenses 1977	Total Expenses 1976	Operating Income 1977	Operating Income 1976	Shareholders Equity 1977	Shareholders Equity 1976	Percent Operating Income to Tot. Rev. 1977	Percent Operating Income to Tot. Rev. 1976
Willett Transports	701670	564062	610305	549876	91365	12186	141191	27311	13.02	2.17
C. W. Transport	75423656	65257054	72024745	62419691	3398911	2837363	15712805	-	4.51	4.35
Rogers Cartage Co.	29281300	25561468	28058232	24774372	1223068	787096	3474300	3592912	4.18	3.08
Schneider Tank Lines	9337275	6432516	8593882	5917711	743393	514805	728974	402647	7.96	8.00
Sibl & Sons	5495777	4873091	5282153	4681896	213624	191195	602243	516240	3.89	3.92
Quality Carriers	7621016	9837215	7274993	10090479	346023	(253264)	844222	728215	4.54	(2.47)
Chemical Haulers, Inc.	2207652	1813786	2061650	1858224	146002	(44438)	(59717)	(27100)	6.61	(2.45)
Montgomery Tank Lines	4414578	3571083	4188883	3342844	225695	178239	764424	609651	5.11	5.06
Scrap Haulers	617374	813122	657836	644392	(39462)	168730	173112	157669	(6.39)	20.75
Coastal Tank Lines	68897120	56595748	65073832	53360144	3823288	3235604	10503105	8558532	5.55	5.72
Indianhead Truck Lines	28994125	26659504	28081228	26273522	912897	385982	1752404	1738279	3.15	1.45
Laney Tank Lines	5665765	4871496	4899235	4158420	766530	713076	3240203	-	13.53	14.65
Ruan Transport	58286301	51067813	55945681	48977092	2340620	2090721	12003869	10315355	4.02	4.09
Transport Company of Texas	921555	981723	872664	918682	48891	63041	92159	63214	5.31	6.42
Whitfield Tank Lines	8262061	6957580	8683212	7149859	(421151)	(192279)	1516842	1815713	(5.10)	(2.76)
Liquid Transporters	14342183	11822648	13218684	11117825	1123499	704823	7633797	6737763	7.82	5.96
McKeown Transportation	2968122	2481743	2611374	2244300	356748	237443	2014230	1803327	12.02	9.57
Miller Transporters	-	25195072	-	22983285	-	2211787	-	3446680	-	8.78
C. I. Whitten Transfer	5993114	3985504	4862469	3393043	1130645	592461	3646403	-	18.87	14.87
Edward M. Rude Carriers	908994	715166	852113	692135	56881	23031	209451	180623	6.26	3.22
Ashworth Transfer, Inc.	1480731	1146791	1357812	1191493	122919	(44702)	110900	95550	8.30	(3.90)
Robinson Freight Lines	197036	420438	243393	369094	(46357)	51344	360204	409190	(23.53)	12.21
Hitchcock Transportation	721980	676785	713311	673536	8669	3249	132748	124479	1.20	0.48
Frank C. Klein & Co.	592523	446205	570456	461598	220o7	(15393)	360231	332367	3.72	3.45
Petroleum Transport Service	782313	683708	712272	622319	70041	61389	254523	189065	8.95	8.98
Brever Petroleum Service	-	916057	-	896616	-	19441	-	68928	-	2.12
Average					694367	558959	2758859	1821157	4.99	4.62

Source: Motor Carriers' Annual Reports.

While in 1977 the average operating income was just under $700,000 and average net worth $2.76 million, it is notable that some of the profile carriers incurred operating losses both in that and the preceding year. Overall though, their operating income to total revenue was close to 5% in 1977 and 4.6% in 1976, indicating a relatively healthy industry even though their profit margins are believed to be unsatisfactory by carrier managements, a view generally shared by the ICC.

Comparing these carriers' current insurance practices with the sample of spill "clean-up" costs contained in Chapter V, D, 3, the picture is one reflecting rather wide ranges. While third party liability insurance coverages were shown to range from as little as $75,000 with practically no deductibles, the top of the scale is $30 million and $2 million self-retained. Comparably, more than three-quarters of the spill "clean-up" costs attributable to accidents caused by hazardous waste haulers amounted to less than $10,000 and almost 90% amounted to less than $300,000. However, catastrophic spills caused "clean-up" costs of up to $4.8 million and averaged $1.9 million.

While there is an undeniable correspondence in carrier size and amount of liability coverage purchased, such correspondence does not exist with respect to single incident exposure. Put differently, an operator with but a single truck is judged to have no less risk exposure per unit of operating equipment than the very large carriers. If anything, due to lesser capability in accident prevention and risk management, the small carriers are far more vulnerable to the potential for catastrophic spills than their large counterparts. For such catastrophic events, the smaller carriers are both inadequately insured and lack internal resources to provide compensation for the damages they might cause and be held responsible.

c. Other Hazardous Materials Motor Carriers. The non-waste hauling truckers consist primarily of larger, well established and insured firms. Among these are some of the nation's largest transporters which have specialized hazardous commodity divisions. These carriers have long been subject to DOT's hazardous materials transport regulations. They possess a well-developed sensitivity for their risk exposure and vulnerability to third party claims of significant proportion.

Accordingly, the average hazardous materials transporter by highway is insured for sums far in excess of regulatory requirements. As the before presented insurance practice profile has revealed, the least amount of third party coverage observed for any of the study carriers was $1 million with self-insurance of half that sum, to as much as $50 million in underwritten comprehensive liability coverage, and self-retained portion of $5 million.

These carriers' practices and their internal financial resources reflect a very comfortable balance of a reasonable exposure on the one hand, and the provision of public protection, on the other. Of course, here too some exceptions are evident; these, though, are well within a normal public acceptance of risk exposure. The exceptions referred to relate to too much self-insurance, in some cases, and less than catastrophic event covering insurance limits. Remembering, however, that self-insurance for the first $300,000 of aggregate financial responsibility is subject to ICC scrutiny for interstate carriers, it follows that transporters who have adopted self-insurance practices for that or even large sums, do in fact possess internal resources of sufficient size to guarantee their capability to cope with risk exposures in that magnitude.

The observed shortcoming in these operators' practices to cover themselves sufficiently in the event of a catastrophic spill is disconcerting. It may well be due to lacking insurance availability or affordability or both.

d. Adequacy Conclusion. It would appear that a distinction between specialized hazardous waste haulers and other transporters of hazardous materials is appropriate. Overall, the situation depicted for waste haulers, except for the largest among them, is unsatisfactory. Both their purchased and internal financial capacity cannot be judged to afford the partial protection even a reasonable risk accepting public is bound to condone. The smaller and medium sized transporters of waste in the event of a catastrophic spill are bound not to be able to make good on their liabilities. Should such major accidents cause long-term environmental damage, the type which is not discovered, rectified or mitigated within a short period of the occurrence, the already unsatisfactory situation would be further aggravated, placing a potentially heavy burden on the public and raising the specter for uncompensated damage to private property and human life.

Contrarily, hazardous commodity haulers not specializing in the transportation of wastes are mostly well insured for all short-term eventualities they are bound to be exposed to. Both external and internal financial resources available to these operators in the event of accidental spills are on average far in excess of their most common liabilities for damages caused. Moreover, due to these transporters' sensitivities to the effects of catastrophic accidents, their excess coverages are in sums far beyond the bounds of this study's empirical spill "clean-up" estimates for such catastrophic events.

Summation, Overview

1. Summation in Brief

In Table 11, a summary of the comparative analysis contained in this chapter is depicted. By review of the figures in the center and right hand columns, it is readily apparent that indeed, the first ranked water carriers are perhaps more than adequately insured for damages attributable to the spill of hazardous wastes and other ecologically damaging articles. Most comforting is the fact that for the Federally required "clean-up" coverages, no deductibles or self-retained coverage is permitted.

Though not quite as adequate as for carriers by water, the railroad industry is reasonably well insured. There are some significant exceptions. These pertain principally, though not exclusively, to the smaller entities, the so-called short-line railroads. Their purchased insurance is limited for all intents and purposes to an excess coverage of $2 million over a self-retained sum of $25,000 to $100,000 in most instances. The comparison reveals, however, catastrophic experiences attributable to these transporters averaging in cost from $3.7 million to an observed incident with short-term damages in an aggregate estimated cost of $6.1 million. Obviously, there is a large uninsured gap; it is troublesome because of the average low level financial capacity of that segment of the railroad industry.

Table 11

SUMMARY/HIGHLIGHTS

Relative Adequacy of Financial Responsibility Coverage
All Modes of Hazardous Waste Transport

(all financial data in thousands of dollars)

Rank, Mode	Range of Comprehensive Liability Coverage		Range of "Clean-up" Cost for Indicated Percent of Spills, and Catastrophic Events
	Self Insurance	Purchased Insurance	
Water, small	2.5 - 10.0	5,000-10,000[1]	94% < 900; aver. 3,200, max. 9,500
	none	greater of 0.125/gwt. or 125[2][3]	
large	100 - 1,000	5,000-20,000[1]	95% < 100; aver. none, max. 700
	none	greater of 0.150/gwt. or 150[2]	
Railroads, small	25 - 100	2,000	82% < 2.5; aver. 3,700, max. 6,100
large	1,000-10,000	30,000-50,000	88% < 100; aver. 3,700, max. 9,200
Motor, haz. waste carriers	2.5 - 2,000	75 - 40,000	89% < 300; aver. 1,900, max. 4,800
other haz. comm. carriers	500-5,000	1,000-50,000	

[1] P&I (Marine).

[2] Exclusively spill "clean-up" costs; coverage provided by WQIS.

[3] 0.150 gwt. or 250 for oil or hazardous substances carrier.

Sources: Derived from carrier and insurance industry interviews, estimates of "clean-up" costs as defined in ch. V of this report.

The larger railroads, the Class I segment of this vital industry, though displeased with the lack of coverage availability in excess of $50 million, seems quite well assured. Surely, the frequency of their exposure and the size of the damage potential could justify additional layers of excess coverage. This justification would appear to be limited to carriage of articles not anticipated to be included in waste transportation.

The hazardous waste transporting motor carriers are, by and large, underinsured and do not possess adequate internal resources to provide a reasonable prospect for the public's indemnification in cases with catastrophic consequences. Only the larger carriers in this industry seem to elect, and are able to obtain commercial insurance with limits in excess of the catastrophic accidents "clean-up" costs. Contrarily, that segment of the trucking industry which does not participate in hazardous waste transportation in any significant degree, but which is the principal carrier of other hazardous articles, is quite well insured for it comprises in the main larger, more cautious and risk management oriented transporters. It also follows that these motor carrier operators have substantially larger equity positions so that their risk retention of sums up to $5 million represents but a fraction of their average net worth.

2. Overview

It was documented earlier in this chapter, specifically the data presented in Chapter III, that significant regulations specifically aimed at protecting the public against unpaid losses from spills of hazardous materials, exist only at the Federal level and are exclusively applicable to carriers by water. With only this exception to note, it should be emphasized that the relatively high degree of financial responsibility adequacy observed for transporters of hazardous wastes has come about voluntarily and out of managements' self-enlightenment.

Were it not for the high level of awareness among managements and owners of transportation enterprises of their exposure to risks and liability for damage, insurance practices would be totally inadequate. For that matter, it is also likely that insurance availability would be far more limited and affordability at best marginal. This is so because on average the admitted segment of the American casualty insurance industry, for its own good reasons, does not seek to write coverage for hazardous articles transporters.

In sum, the risk consciousness of transportation firm risk managers is the primary cause for the relatively adequate financial responsibility posture attending to the assets in these managers' trust. Though, as noted, some troublesome deficiencies exist. These and related matters are explored further in the concluding chapter of this report.

VII. FINANCIAL RESPONSIBILITY STANDARDS, CONTROL OPTIONS and THEIR IMPLICATIONS

A. Are Standards Necessary?

Without much debate a case can be made in support of the need for new standards to assure the financial responsibility of transporters of hazardous wastes. However, with not much greater difficulty a case can be made for a contrary position. Fundamentally, the preceding report chapter identified only one critical area of deficiency in transporters' present insurance practices. That of the specialized and mainly small motor carriers, which either due to limited availability or affordability, or a combination of both, do not purchase comprehensive liability insurance with limits which are believed to be sufficient to provide public protection in all but relatively minor spills.

The principal arguments in support of the need for new standards for all but the water carriers are:

a. the complete absence of standards applicable to railroads[1], and

b. the apparent insufficiency of existing standards for motor carriers, at the state and Federal levels.

Possibly an even more potent issue relevant to all but the regulated water carriers pertains to late discovered ecological damage for which no standards or insurance requirements presently exist; late discovered damage is defined as harmful effects of spills not identified prior to the expiration of the Statutes of Limitation. It should be pointed out here that under the provisions of the Statutes of Limitation, claims not made during the time periods available, generally from three to five years, the liabilities and obligations of parties held responsible for causing harmful effects are extinguished and no further recourse is then available to the injured parties. Not enough definitive information is presently available to determine the probabilities of long-term ecological damages resulting from hazardous waste spills and which damages would not normally be identified, and claims filed prior to the expiration of the time limiting statutes. It is conceivable, however, according to experts in the field, that under certain topographic, geologic, and environmental conditions, several years could pass before the pollution of an aquifer is discovered or a deep soil's crop bearing capacity is destroyed and this event and its cause are finally established.

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[1] It is arguable that because railroads hardly participate in transportation of hazardous wastes, EPA's interest is with reference to hazardous substances only.

The potential problems arising from damage discoveries after the expiration of the Statutes of Limitation may well be solved by EPA's declaration under RCRA that a spill site is, by definition, a disposal site. A 20-year responsibility will apply to all disposal sites.

The principal arguments against the promulgation of new standards are:

a. the present legislative and regulatory climates which abound with proposals for less or complete removal of economic regulations of interstate surface transporters are opposed to additional regulations,

b. the voluntary practices of some transporters of hazardous materials serve as evidence of their risk managers' concern for adequate financial resources to be available in the event of accidental spills,

c. setting of standards at levels above those now voluntarily employed by railroads and truckers is bound to cause problems of coverage availability and affordability. Such higher standards could also be an impediment of new carriers' entry.

The last of these points is bound to aggravate the first by stimulating even greater opposition to new and additional transport regulation. If indeed both or either of the availability and affordability problems would arise, matters about which there is no certainty until they are put to the test, it is likely that solutions to them will involve Federal facilitation measures, either directly or indirectly. Direct measures would involve the establishment of a suitable insurance or reinsurance vehicle and the absorption of both administrative and casualty loss expense. Indirect measures would involve authorizing increased freight rates for transport services subject to economic regulation, and/or the transfer of financial responsibility from transporter to shipper or consignee.

Based on our findings in this study, we are inclined to support the viewpoint that additional standards are needed to protect the public's interests. We have reached this conclusion not only by careful examination of the "pro" and "con" arguments noted before, but also because of our concern over the perpetuation of the voluntary practices of railroads and motor carriers. Both of these components of the transportation industry have experienced severe financial difficulties of late. Their cost of comprehensive liability insurance is not insignificant. It is therefore logical to project that circumstances can arise which would motivate carrier managements to insure only to the extent required by law, rather than to continue their far more costly voluntary practices.

This relatively large expense is not likely to decline if present voluntary practices were to become "compliance" practices. Then, though, carriers would not have any choice about the cost of insurance; premium costs for limits complying with standards are a necessary cost of doing business.

In the remainder of this chapter, subjects relevant to the question posed in this section will be explored on the assumption that EPA wishes to assure the availability of reasonable, if not all catastrophic cases, adequate financial resources to compensate for damages caused by spills of hazardous wastes while in transit.

B. Inadequacy of Present Standards

1. Railroads. The term inadequacy is somewhat inappropriate

here since there are no standards. In Chapter III. B. we explained that Federal and state agencies, specifically the ICC and the states' commerce or public service commissions, have traditionally held the view: railroads are large, well capitalized entities for which financial responsibility regulations are unnecessary. Admittedly, both small and large carriers by railroad have consistently demonstrated a high degree of financial responsibility (within the meaning of this study) by implementing a balanced program of self-insurance and commercial insurance.

However, some recent events give rise to concern, these were discussed in some detail before. It should be remembered here that in addition to the industry's deteriorating financial condition, rendering their self-insurance capability less certain, there has been much deferred maintenance of tracks, yards, and rolling stock. The deterioration of railroads' physical plant is in large measure, according to safety and insurance industry experts, the cause for more frequent accidents, some of which involved spills of highly volatile materials, and which spills have caused a number of catastrophic events, as herein defined.

As we noted previously, railroad managements are highly sensitive to their risk exposure and many of the larger companies, though they are currently insured for excess liabilities of up to $50 million, and a few even for more, are seeking more protection. The smaller, short-line railroads, practically without exception, are aware that their present coverages of about $2 million, are grossly inadequate in comparison with their exposures. For both the large and small there is a common problem, insurance availability and affordability. Setting of standards would not solve that problem.

Finally, we must again remind of a peculiar risk as much applicable to the short-line railroads, if not more, than to the Class I industry. That risk is the concentration of railroads in the highly industrialized and densely populated urban areas. A major catastrophic event, if it were to happen in one such area, could cause injury and damage in almost unthinkable magnitudes. Surely, voluntary insurance of $2 million and even $50 million per occurrence would fall far short from the sums needed to provide compensation.

2. Water Carriers. Financial responsibility for pollution "clean-up", administered by the FMC are, in our view, the model recommended for modified adoption to the other modes. However, it should also be noted that these standards do not apply to personal injury and wrongful death, nor do they apply to non-self propelled vessels, i.e., barges, unless they carry fuel oil or hazardous substances.

The water carrier industry too is one which assures availability of financial resources potentially needed for spill "clean-up" through a voluntary, self-enlightened practice of self and commercial insurance. The history and the tradition of marine Property and Indemnity coverage differ from all others in that they are so well established that public officials need not be as concerned, if at all, about the perpetuation of these practices as is the case in respect of the other modes. According to both carriers and underwriters, no serious deficiency in coverage availability has ever existed. In fact, the insurance market for marine Property & Indemnity is highly competitive and believed to be among the most desirable lines of casualty insurance. That is not to say that assureds do not complain of high rates.

Further insight on the insurance industry's response to financial responsibility regulation for carriers by water is gained from the voluntary establishment of the Water Quality Insurance Syndicate (WQIS). The point to be made is that Federal regulations in this area per se do not necessarily result in a financial responsibility requirement, such as the pollution clean-up insurance written by WQIS, that cannot be met by the regulated without Federal facilitation. In fact, it should also be remembered that the FMC's regulations in Parts 542 and 543 of Title 46 of the Federal Regulations accord regulated carriers the choice for compliance by filing of a surety bond, guarantee, or to qualify as a self-insured.

As will be explained in some detail in a subsequent section of this chapter, the FMC regulations nicely compliment carriers' voluntary practices in that they approach a regulatory sufficiency for standards both within our hereinbefore defined concept of zone of reasonableness and the public's expectations for adequate protection.

3. Motor Carriers. The most that can be said about Federal and state standards for motor carriers' financial responsibility is that there are such. The standards set by the ICC in its Title 49, Part 1043, have not been revised since 1974, so that the minimum requirements of $300,000 for bodily injury and $50,000 for property, constitute presently grossly inadequate requirements, in particular when applied to transporters of hazardous articles. While a few states, Colorado and Virginia among them, require higher minima with some exceptions, the states have largely followed the ICC's lead or have even lesser requirements.

It is to be noted, the ICC never intended for its regulations to be reflective of the "worst case" situation. Nevertheless, the data exposed in this study strongly suggest the existing prescribed limits are far less than exposures in "worst case" situations.

As we pointed out before, motor carriers in general, and those transporting hazardous materials in particular, have mostly adopted voluntary practices of insurance which reflect not only their sensitivities to risk exposure, but also their explicit recognition of the inadequacy of existing standards.

Though almost 90% of the motor carrier caused spills quantified in our Chapter V analyses caused costs of less than $300,000 per incident, it was shown in Table 6 that 32 spills had occurred with "clean-up" cost estimates in excess of the ICC's minimum coverage requirements. The carriers' concern, and their willingness to spend substantial sums for comprehensive insurance coverages, obviously goes to these larger cost incidents.

Another factor of significance in support of our assessment of inadequate standards, one that undoubtedly is of special import to EPA, is the observed practice of a large percentage of specialized hazardous waste transporters. As was noted in Chapter VI, these mostly small carriers do not follow the practices of their counterparts in hazardous materials transportation by motor carriers of property. This study did not endeavor to identify carriers' non-compliance with existing regulations; rather, it focused on actual practices. These practices were shown to include commercial insurance at limits below those established by Federal regulation.

Lastly, it is appropriate to review briefly an apparent anomaly in the ICC's interpretation and administration of its Part 1043 regulations. In a 1965 decision, Joray Trucking Corp., Common Carrier Application, 99 M.C.C. 109, the Commission ruled that garbage, refuse and trash are not within the meaning of property as defined in Sec. 202, Chapter 8 of Title 49, and therefore, the transportation thereof was not subject to the ICC's regulations. In a 1969 decision, Long Island Nuclear Service Corp., Common Carrier Application, 110 M.C.C. 398, the Commission decided notwithstanding the valuelessness of nuclear waste, it should continue to regulate "dangerous" traffic. By that decision hazardous waste transporters continued to be subject to ICC regulation, including the Part 1043 regulations on financial responsibility. In a more recent decision, Nuclear Diagnostic, 129 M.C.C. 339, decided May 10, 1978, the Long Island Nuclear decision would appear to be overruled. Noting the extensive body of regulations promulgated by NRC and DOT, the ICC held in Nuclear Diagnostic that transportation of hazardous waste considered by the generator to be devoid of economic value to be exempt of its regulations.

While one legal interpretation raises the specter that by analogy transportation of all hazardous wastes is henceforth exempt from the ICC's economic regulations; Commission staff itself does not support this broad interpretation. Rather, in the view of Office of General Counsel staff, the recent decision has applicability to nuclear wastes only, while the Long Island Nuclear decision continues unaltered with respect to other hazardous wastes. That interpretation, until and unless reaffirmed by another ICC decision, or a court's verdict, raises doubts as to the Commission's intention and ability to enforce its own Part 1043 regulations.

C. Standards for Hazardous Wastes or Hazardous Materials

The Consultant recognizes EPA's jurisdiction applies to hazardous wastes only while DOT's encompasses hazardous materials. The distinction between the two agencies' mandates is embodied in P. L. 94-580, RCRA, and its Subtitle C specifically, and the Hazardous Materials Transportation Act of 1974 (HMTA) and regulations promulgated thereunder in 49 CFR 173 et. seq.

It has become apparent from the findings in this study that financial responsibility standards for hazardous materials transporters are as wanting as they are for wastes. In fact, the point was made repeatedly that standards for hazardous materials transporters specifically exist only for the maritime mode and that, of course, no specific standards exist for any transporters of dangerous wastes.

This basic finding, the absence of comprehensive standards for the financial responsibility of transporters of hazardous commodities, in other respects subject to DOT's OHMT regulations, raises the question: Should not EPA pursue the same policy as it has in respect of other aspects, including packaging, labeling and manifesting of hazardous wastes transportation? That policy is one of cooperation with DOT to the effect and the maximum extent feasible of "piggy-backing" EPA's statutory authority, by regulation, to DOT's authorities, and thereby assure the prospective existence of a uniform body of regulations which is applicable to all articles defined to hazardous characteristics, regardless of whether they are articles with or without commercial value.

We have not investigated specifically DOT's regulatory powers in this area. We tend to believe, however, that HMTA is sufficiently broad to grant DOT the requisite authority. Also, as will be noted in section E. of this chapter, DOT has renewed its legislative initiatives, first demonstrated during the tenure of the 95th Congress, for comprehensive financial responsibility legislation and regulation. Inclusion of hazardous wastes in DOT's initiatives would merely equal the precedent established last year in respect of packaging, labeling, etc. of hazardous wastes.

EPA, on the other hand, would have to "go it alone" if DOT or the Congress were not to authorize the inclusion of hazardous wastes in the legislation presently proposed. EPA's attitude is based on Congressional intent and the mandate with which the Agency was charged pursuant to RCRA. In sum, EPA feels it is responsible to protect the public against uncompensated damages resulting from accidental spills of hazardous wastes while in transit.

Standards for Transporters, Shippers or Consignees

Another fundamental question arises from the Subtitle C (of RCRA), isolation of generators, transporters, and disposers, and EPA's approach to regulations applying to each of these. While logic supports the view that regulations for hazardous waste packaging should apply to the party tendering wastes for shipment, possibly in addition to the transporter who has a secondary responsibility to assure the shipper complied, that same logic cannot be applied to financial responsibility.

Put simply, it can be argued the shipper or generator, or for that matter, the consignee or disposal facility, have no control over the performance of the transport service. Since the non-transporters cannot assure the conduct of safe operations, they cannot assure the avoidance of negligent behavior, they should also not be held responsible for the omission of prudence or the commission of negligence. Only in those instances where shipper and transporter are the same or related entities is it logical to require either or both to hold the public harmless of damages caused by their actions.

Accordingly, it is concluded that standards should apply to the party performing the transport service. This though is not to say that transporters' obligations might not be assumed by shippers or consignees or both. Whether they do or do not, is again a matter of availability and affordability. The first principle to be recognized in this context is that in the final analysis, the public is the ultimate payer of the cost of protection. Whereas the ratepayer is the party of the first instance absorbing the cost of protection, it is probable, if not certain, that the ratepayer passes on that cost, along with its other costs, to its ultimate consumer or customer.

With the public's interest best served by keeping the cost of protection as low as possible, it should be noted that large, well run manufacturing firms are likely to obtain insurance coverages for transportation at lesser costs than transporters themselves, especially the smaller trucking firms. The reason is not only that insurers' risk assumption would apply to a broader base, but also because these larger firms are usually more competent risk managers and loss avoidance experts.

The same truism applies to the availability factor. Again the larger manufacturer, being an assured for comprehensive liability coverage, including product liability, would have less difficulty to expand the scope of coverage provided by his traditional underwriters to include "in-transit" coverage than has been the case for the smaller motor carrier.

In sum, the conclusion reached here is that while the transporter of hazardous articles must remain the party to be held liable for compliance with existing and prospective standards for financial responsibility, transfer of liability by hold harmless agreements between shippers or consignees and the transporters should be permitted and encouraged, as a cost saving and improved protection measure.

E. Other Policy Issues Ralated to Standards

1. Limiting Liability. At least two precendents exist to limit the liability of the parties held liable for causing injury

and damage. The precendents referred to are in the FMC administered Title 46, Part 543, which sets the maximum liability of transporters at the same standard at which their financial responsibility is set, and in the Price Anderson Act, administered by NRC, under 42 U.S.C.A. § 2210(a), which limits the liability of certain nuclear facilities, as defined in the regulations. That definition includes not only the facilities themselves, e.g., their owners, but also engineers and architects, vendors and transporters, all in the conduct of their business with the subjected nuclear facilities and up to the sum required as financial responsibility, the establishement of which is a condition precedent to the licensing required for such nuclear facilities.

The history of both precedent examples reveals that the intent was to establish some finite liability in the event of catastrophic occurrences. Further, the intent reveals that if such limits had not been established, insurability would have been extinct.

It was documented in this report that insurability for relatively high limits of hazardous waste spills is available to large transport entities and that those entities hold themselves insured for more than the highest estimated costs of spill "clean-up". However, one cannot say or predict whether one or more catastrophic events may not occur at a future time with "clean-up" costs of hundreds of millions of dollars. Such a catastrophy is surely not precluded considering the large damage awards made to survivors of persons killed and the exposure of transporters to densely populated areas. Also, again the unknowns of long-term and initially undiscovered ecological damages should be remembered.

We reason the public interest is well served by limitations of liability, for it results in greater insurance availability and affordability for all but catastrophic incidents. If insurers would no longer have to worry about a railroad derailment for which their liability can now be $50 million, but perhaps a limit of $10 million, they would be more likely to participate in the underwriting of this risk at a greatly reduced premium rate.

Still, how is the public to be made whole? The answer is found by reference to the Public Liability Fund established pursuant to the Price Anderson Act and administered by NRC. Similarly, the National Flood Insurance Fund administered by HUD is a mechanism providing for compensation in excess of that required of or provided by commercial insurers.

Since the time this study was begun and the research undertaken was completed, several legislative initiatives have emerged during the first session of the 96th Congress. In fact, the Congress was hardly sworn in when Mr. Biaggi and a number of co-sponsors introduced H. R. 85, the Comprehensive Oil Pollution Liability and Compensation Act. A largely similar proposal is embodied in H. R. 29 and S. 684. These proposed Bills' highlights are described in Appendix F. Also contained in that appendix are summaries of rules proposed by the Coast Guard and the Federal Maritime Commission, respectively, under the Outer Continental Shelf Lands Act Amendments of 1978.

The Biaggi and Magnuson (S. 684) proposals reflect DOT's legislative proposals for the establishment of "Superfunds" to compensate for damages caused by oil spills, and to limit the extent of financial liability for claims resulting from accidental discharges.

Meanwhile, EPA has initiated its own legislative proposal. While details of EPA's proposals were not released as of the time this report was being completed, the Agency's approach and significant details have been made available to us. Compared with all other pending legislative proposals, existing and proposed regulations, EPA's approach is the most comprehensive. Its proposal would establish a uniform system of notification, emergency government response, enforcement, liability and compensation. That system would apply to releases of oil, hazardous substances and hazardous wastes. Thus, the EPA legislation, built upon and incorporating Section 311 of the "Clean Water Act" and the proposed before mentioned "Comprehensive Oil Pollution Liability Compensation Act" developed by DOT, extends the DOT draft bill to spills to the environment, not just navigable waters, of hazardous wastes and designated hazardous substances. Also, notification, emergency response, penalty and spill prevention of Section 311 would be incorporated. The Section 311(k) fund, now an appropriated fund, would be changed to an expanded fee-based fund while adding a compensation system for third party property and economic livelihood damages from spills. Active and abandoned disposal sites are also included in the Agency's proposal; compensation to third parties for releases from disposal sites is, however, excluded. The fee basis of this "Superfund" version extends to hazardous substances and wastes, not just oil; an annual Federal appropriation is retained.

EPA's concepts on liability are similar to those embodied in other legislative initiatives.

From the perspective of this study's focus, several comments appear warranted with respect to the recent evolution of Executive and Legislative activities.

Briefly, they are:

- Public officials' acknowledgement of the need for additional public protection is amply demonstrated.
- Approaches taken to the eventual provision of added public

protection do not merely place an increased burden on the transporters, generators and disposers of potentially damaging materials, but give recognition to the fact that in the event of catastrophic accidents, the private sector is incapable of "going it alone".

- The popularity of fee-based funds suggest an increasingly strong desire to spread the cost of environmental protection, and spill "clean-up" to a broader societal base, i.e., the consumers of a large variety of products and not just the users of oil products or shippers of a limited product list.
- While liabilities of transporters would continue, and their financial responsibility requirements would also survive, the thrust to limit these liabilities both financially and by cause of accident is bound to expand insurance availability and improve affordability.

2. Economic Effects of Increased Standards. There can be no doubt that increased standards would cause additional costs for transporters not now insuring for excess limits above those required by regulation. However, we noted repeatedly that such increased costs would only be incurred by the smaller specialized waste haulers by motor carriers and the short-line railroads. Other components of the transportation sector, as noted, already incur the larger insurance costs for their voluntarily insured high limits.

If anything, on average, a reduction in insurance cost could be anticipated from a combination of increased standards and limited liability. Thus, large railroads now expending an average 6% to 7% of their gross revenues for third party liability insurance may be able to reduce this costly item by as much as one half or even more, while short-line railroads could expect to experience more than doubling of their insurance costs. The same situation would apply to the large and small motor carriers, except that the family owned small special waste haulers, operating mainly as contract carriers rather than regular common carriers, could be indemnified either for premium costs or their liabilities by agreement with their shippers and/or consignees.

In substance then, the projectable economic impact is one of a balancing shift. What is disturbing about this reality is that it tends to benefit the large enterprise to the detriment of the small. A mechanism to ameliorate this undesirable potential is proposed in the section following.

3. Mechanism for Impact Equalization and Full Public Protection.

Mentioned in a previous section were several public or governmental funds from which payments to injured or damaged parties are or would be made. These public funds are similar in nature to the reserve funds established by private insurers. In the latter case, certain portions of assureds' premia are set aside to create financial reserves from which claims can be paid as needed.

Public finds are established either with appropriated funds, or like the private reserve funds. from insurance premia or other fees paid by the private sector. To relieve the public from the undesirable financial burden inherent in appropriations, it is suggested that the practices employed by the two of the before mentioned public funds be employed. Specifically, concurrent with the implementation of a liability limiting regulation and the establishment of increased responsibility standards, transporters could be required to pay into the public indemnity fund the equivalent of an insurance premium, the level of which could be related or tied to transporters gross income or gross revenue. Tying premia to gross revenue has the dual effect of being a readily measurable standard and avoiding an excessive burden on the smaller carrier.

If the suggested practice is adopted, the larger carriers by rail and highway (water carriers should probably be excluded because of the existing FMC standards) would pass up their premium savings for some time since the difference between present and prospective commercial insurance premiums would be paid over to the public fund. At the same time the increased premium cost for small carriers would affect them only to the extent which carriers are now grossly underinsured.

Eventually, the pooling of resources in a public fund will result in reduced costs to all transporters subject to contribution to and payment of damages from the funds. That would happen when a sufficient reserve is established so that additional contributions to the fund would be made only to the extent depletion occurred due to payment of damages. Again, the principle espoused is the same as that attending to the (Nuclear) Public Liability Fund, except that in its case the initial industry participation of $125 million was shared by the government's participation in the amount of $435 million, to create a total liability fund in the amount of $560 million.

4. Role for Federal - Insurance Industry Cooperation. The role chosen for itself by and of the American casualty insurance industry in recent years has been more limited than desirable. Much of the premium volume generated from coverages for the large railroads ends up in foreign banks, mainly the London market. Were it not for the non-admitted segment of the casualty underwriters, i.e., insurers writing coverage extending to states in which they are not licensed to write, practically no domestic coverage would be available for the railroad industry. Just how much of the other modes' coverage is written abroad, either directly or as reinsurance, is not readily identifiable. It is a fair assumption, however, that also much of the demand for Marine Property and Indemnity coverage is satisfied by offshore insurers.

Contrarily, the aggregate financial capacity of the domestic casualty insurance industry is second to none in the world. The causes for the industry's lacking participation in the marketplace are not insufficient capacity, but, as noted before, their assessment of the risks and their unsatisfactory claim experience. We noted that two railroad insurance syndicates were demised by large claims and small premia; also, the relatively new WQIS claims to have incurred losses and contemplates to raise its rates, if not also restricting its coverages further.

Recommendations contained in the preceding section, if implemented, are believed to go a long way towards increased participation in the liability insurance market by domestic underwriters. Principally, the risk limitation proposal would provide the industry with finite measurable quantities it can cope with in the actuarial sense. Hence, it should be evident that opportunities would exist for a new dialogue between Federal regulators and the insurance industry. The effects of this dialogue can be projected as increased domestic underwriting at reduced premium costs.

An extremely interesting development related to the U. S. casualty insurance industry was first publicized in the New York Times of Sunday, May 13, 1979. Called the New York Insurance Exchange (NYIE) and stimulated by recent changes in the State of New York insurance laws and Lloyd's of London's refusal to allow access to its facilities to two American insurance brokers, the emerging exchange proposes to become a U. S. Lloyd's. Though, on the path to implementation, NYIE is bound to encounter numerous difficulties, among them the need to raise very large sums of investment capital, the Exchange's enterpreneurs have already travelled a long way to assure their eventual success.

NYIE will provide insurance and reinsurance facilities, mainly through syndications among members, for esoteric and large risks. At this time we cannot be clear whether these terms are meant to include, for example, the large risks of small railroads or, for that matter, those now insured by the Class I railroad industry in London.

The initiatives taken by the Exchange's organizers are sufficiently innovative to suggest that their enterprise can reasonably be expected to include in its routine scope of insurance writing the needs of hazardous substances transporters. Again, it bears emphasizing that the legislatively proposed liability limitations are bound to go a long way towards encouraging this new facility or an offshoot of it to encompass hazardous substance spill liability.

In sum, NYIE's emergence should be welcomed and supported, for it promises to retain in the U. S. a major portion of the $4 billion in insurance premia which annually leave our shores. Along with these most welcome attributes, this enterprise is also emerging as a new employer for hundreds of U. S. citizens.

Finally, being a domestic organization, it is susceptible to working with the Congress and the Executive Branch in the development of a public-private partnership which will provide the public protection needed at the least societal cost.

Another related policy issue has been examined. Namely, is there statutory authority to require domestic insurers to provide coverage for transporters of hazardous wastes, and related thereto, may premia be prescribed if deemed necessary to preclude confiscatory rates for the smaller operator? Our research has not revealed any existing authority for either of the two addressed issues.

A recently proposed Senate Bill (S.2083, 95th Congress) would have come close to providing enabling legislation though it still would have left the insurance industry's participation in the proposed coverages voluntary. The "stick" in that legislation would have been another public fund into which premia would have been paid by assureds which have not been able to contract for commercially underwritten coverage at reasonable cost. It should be noted that a similar but not identical Bill was passed by the House (H.R. 6803, 95th Congress, 1st Session).

F. Summing Up

Even though the avoidance of additional regulations in the area of transporters' financial responsibility would be desirable from every viewpoint but one - the need to assure adequate public protection in harmony with the public's reasonable expectations - it was concluded that existing requirements do not nearly meet perceived needs. Unless public policy makers are satisfied to place continued reliance upon the voluntary measures adopted by the larger entities in the hazardous waste transport industry, there is no other choice than to promulgate a set of new regulations calling for financial responsibility standards of sufficient size to satisfy damage claims for all but the most severe catastrophic occurrences.

Moreover, an aspect practically ignored in present standards, insurance practices and the governing laws, is that which is especially germane to the EPA's direct scope of interest. We refer to not readily discovered long-term environmental damage. The term long-term environmental damage in this context should be interpreted to include human injury such as that resulting reportedly from exposure to asbestos and numerous other substances which often time is not revealed for many years subsequent to the initial exposure.

The burden of additional regulation could be mitigated by inclusion of regulations for transporters of wastes with those needed for transporters of hazardous commodities. Not only would this concept assure uniformity of regulations, in particular as between the different Federal agencies with present jurisdictions, i.e., ICC, DOT, FMC, EPA, NRC, USCG and CAB, but it would avoid the necessity for establishing an additional implementing and enforcing bureaucracy at considerable cost to the general taxpayer.

Various mechanisms to accomplish the ultimate aim without significant adverse economic impacts have been suggested. Their implementation, it is surmised, will require legislation in addition to interagency cooperation. For example, the public funds cited as examples as vehicles for the creation of catastrophic events reserves have all been established pursuant to specific authorizing legislation.

In the event EPA's legislative initiatives are ultimately unproductive, the control options then available would be rather restricted. In particular, without the ability to limit transporters' liability, it is unlikely that concurrent gains in insurance availability and affordability could be achieved.

In conclusion, it would seem that recognition of the transport industry's voluntary financial responsibility practices is presently accorded far greater protection than existing regulations require. Increased public awareness of the environmentally damaging potentialities of hazardous waste spills, and the demand for more environmental protection and improved damage mitigation appear to be incompatible with exclusive reliance on transporters' voluntary practices.

Such exclusive reliance would, as noted, apply to the railroad industry. Recalling the financial difficulties some major components of this industry have experienced, and the industry's enormous capital shortfall projected just recently by the

Secretary of Transportation, exacerbate public policy makers' concerns. That situation alone, coupled with the observed practices of the smaller but vitally important special hazardous waste truckers, give credence to the recommendation of a minimum regulation for transporters of hazardous wastes by railroad and highway. Such minimum regulation, it is reasoned, would aim at providing sufficient financial resources to compensate for "clean-up" costs, including property damage and personal injury, at levels identified in this report for non-catastrophic incidents. These, it will be recalled, comprise between 76% and 95% of all hazardous materials spills in the 18-month sample.

Finally, what is hoped to have been accomplished in this project is the presentation, in one concise and comprehensive report, the "picture" respecting financial responsibility of hazardous waste transporters as it now exists. More to the point, special efforts were made to compile information reflecting the latest legislative initiatives for the establishment of statutory funds with the view of providing the financial resources to mitigate environmental damage caused by accidental hazardous material spills. As noted before, some of these legislative proposals would extend the Federal financial muscle to compensate for loss of business income and deprivation of individuals' economic opportunity. Most important, however, is not the diversity of these legislative proposals, but the need for a consistent policy approach, and uniformity of regulation and enforcement.

EPA's initiatives of bringing hazardous waste packaging, labeling and placarding regulations in conformance with hazardous materials regulations administered by DOT is an excellent example for inter-agency cooperation, avoidance of regulatory inconsistency, and minimization of regulatory burdens imposed on the regulated and the public at large. It should be hoped that this enlightening experience can be operated in the area of financial responsibility legislation and regulation.

Undoubtedly some additional legislation and regulations for the administration of such new legislation are needed to assure both adequate financial responsibility standards and the availability of resources to deal with the consequences of catastrophic spills. What is not needed, though, is a rash of new statutes with conflicting provisions, each dealing with some slice of the hazardous materials pie, and a number of involved Federal departments and agencies to administer redundant sets of regulations.

Appendix A

Excerpt from Title 46 Shipping
Chapter IV Federal Maritime Commission
Part 543 FINANCIAL RESPONSIBILITY FOR OIL POLLUTION ALASKA PIPELINE

Final Rule

§543.5 Financial Responsibility, Amount

Each applicant shall establish that it is able to pay $14 million to meet its liability under subsection (c) of section 204 of the Act. The amount required by this Part is separate from and in addition to the amount, if any, required of the applicant pursuant to Part 542 of this Title.

§543.6 Financial Responsibility, How Established

(a) An applicant shall establish its financial responsibility within the meaning of this Part by any one of, or by any combination acceptable to the Commission of, the following methods:

(1) Filing with the Commission an insurance Form FMC-225P, executed by an insurer which is acceptable to the Commission for purposes of this Part.

(2) Filing with the Commission a surety bond Form FMC-226P, executed by the applicant and by a surety company which is acceptable to the Commission for purposes of this Part. To be acceptable, surety companies, among other things, must be certified by

the United States Department of the Treasury with respect to the issuance of Federal bonds in the penal sum of the bond.

(3) By maintaining in the United States working capital and net worth, each in the amounts as set forth below in this subparagraph. The amount of working capital and net worth to be maintained by the applicant shall be determined by the number of vessels operated by the applicant within the meaning of this Part: for one vessel, $19,000,000; for two vessels, $24,000,000; for three vessels, $28,000,000; for four vessels, $31,000,000; for five vessels, $33,000,000; and for six or more vessels, $34,000,000. For the purposes of this subparagraph, "working capital" is defined as the amount of current assets located in the United States, less all current liabilities; and "net worth" is defined as the amount of all assets located in the United States, less all liabilities. The amounts required by this subparagraph are in addition to the amount, if any, required by subparagraph (3) of paragraph (a) of section 542.5 of this Title Maintenance of the required working capital and net worth shall be demonstrated by submitting with the initial application the items specified in subdivision (i) of this subparagraph for the last fiscal year preceding the date of application. Thereafter, so long as the application is pending or the certificant is holding a Certificate, the applicant/certificant shall submit the items specified in subdivision (i) and (ii) of this subparagraph and shall be subject to the provisions of subdivisions (iii), (iv), and (v) of this subparagraph:

(i) An annual, current, nonconsolidated balance sheet and an annual, current, nonconsolidated statement of income and surplus, for each fiscal year certified by an independent Certified Public Accountant. Said financial statements are to be accompanied by an additional statement from the Certified Public Accountant, certifying to the total amount of current assets and total assets included in the accompanying balance sheet, which are located in the United States and acceptable for purposes of this Part. If the balance sheet and statement of income and surplus cannot be submitted in nonconsolidated form, but are submitted in consolidated form, there must also be submitted an additional statement prepared by the involved Certified Public Accountant, certifying to the amount by which the applicant's/certificant's total assets, which are located in the United States and acceptable for purposes of this Part, exceed its total liabilities, and also certifying to the amount by which the applicant's/certificant's current assets, which are located in the United States and acceptable for purposes of this Part, exceed its current liabilities. Such additional statement must specifically name the applicant/certificant, must indicate that the amounts so certified relate only to the applicant/certificant, apart from any other entity, and must identify the consolidated financial statement to which it applies.

(ii) Supplementary statements as follows:

First, a statement prepared by the Certified Public Accountant, certifying that, as of the end of the first six months of the applicant's/certificant's current fiscal year, the applicant's/certificant's working capital and net worth have not fallen below the required amounts and, second, a quarterly affidavit filed by the corporate Treasurer or equivalent stating that the working capital and the net worth, have not, as of the close of the quarter, fallen below the required amounts. Such affidavits are required only for the first and third fiscal year quarters.

(iii) Such additional financial information as the Commission may deem necessary in particular cases shall be submitted.

(iv) All persons subject to the provisions of this subparagraph (3) shall, in addition to all other reporting requirements, notify the Commission within five days of the date such persons knew, or had reason to believe, that the amounts of working capital or net worth have fallen below the amounts required by this subparagraph.

(v) All annual financial statements required under this subparagraph (3) shall be received by the Commission within three calendar months after the close of the applicant's/certificant's fiscal year, and the six-month statements within three calendar months after close of such six-month period. Quarterly affidavits shall be received within 30 days of the close of the quarter being attested to. Upon written request, the Commission may grant a reasonable extension of the time limits imposed by this subdivision (v), provided that the request is received 15 days before the statements are due, and provided further that such request sets forth good and sufficient reason to justify the requested extension, and provided further that such requests include an estimate of the final calculation of working capital and of net worth. In no event, however, will the Commission entertain a request for an extension of more than 30 days.

(vi) Failure to timely file any statement, data, or affidavit required by this subparagraph (3) shall cause the revocation of the Certificate.

(4) Filing with the Commission a guaranty Form FMC-227P, executed by a guarantor acceptable to the Commission for purposes of this Part. To be acceptable a guarantor must comply fully with all of the provisions of subparagraph (3) of this paragraph (a). However, the amounts of working capital and net worth required to be demonstrated by such guarantor shall not be less than the aggregate amounts underwritten as a guarantor pursuant to this Part 543 and Part 542 of this Title and as an applicant/certificant pursuant to this Part 543 and Part 542 of this Title. Joint guarantors, that is, two or more entities which pool assets in order to qualify as guarantors on behalf of an applicant/certificant, will not be permitted.

(5) Any other method specially justified and acceptable to the Commission.

Appendix B

Excerpt from Title 46 Shipping

Chapter IV Federal Maritime Commission

Part 542 FINANCIAL RESPONSIBILITY FOR WATER POLLUTION

§542.8 Financial Responsibility, How Established

(a) General - Each applicant shall demonstrate that it is able to pay the amount necessary to meet its removal cost liability under section 311 of the Act by establishing evidence of financial responsibility. The amount of evidence of financial responsibility required by this Part is separate from and in addition to the amount, if any, required of the applicant pursuant to Part 543 (Oil Pollution Cleanup - Alaska Pipeline) of this Title.

(b) Methods - An applicant shall establish evidence of financial responsibility by any one of, or by an acceptable combination of, the following methods:

(1) Insurance - Filing with the Commission an Insurance Form FMC-322 (Master Insurance Form FMC-323 when applying for a Master Certificate) executed by an insurer which is acceptable to the Commission for purposes of these regulations;

(2) Surety Bond - Filing with the Commission a Surety Bond Form FMC-324, executed by the applicant and by a surety company which is acceptable to the Commission for purposes of these regulations. To be acceptable, surety companies must, at a minimum, be certified by the United States Department of the Treasury with respect to the issuance of Federal bonds in the penal sum of the bonds to be issued under these regulations;

(3) Self-Insurance - By maintaining, in the United States, working capital and net worth, each in the amount of $150 per gross ton of the largest vessel to be self-insured or $250,000, whichever is greater. For the purposes of this subparagraph, "working capital" is defined as the amount of current assets located in the United States, less all current liabilities; and "net worth" is defined as the amount of all assets located in the United States, less all liabilities. The amounts required by this subparagraph are in addition to the amounts of working capital and net worth, if any, required by Part 543. Maintenance of the required working capital and net worth shall be demonstrated by submitting with the initial application the items specified in subdivision (i) of this subparagraph for the applicant's last fiscal year preceding the date of application. Thereafter, for each of the applicant's fiscal years in which the certificant is holding a Certificate, the applicant/certificant shall submit the items specified in subdivisions (i) and (ii) of this subparagraph and shall be subject to the provisions of subdivisions (iii), (iv), (v) and (vi) of the subparagraph:

(i) Initial and Annual Submissions - An applicant/certificant shall submit an annual, current nonconsolidated balance sheet and an annual, current nonconsolidated statement of income and surplus, certified by an independent Certified Public Accountant. Those financial statements shall be accompanied by an additional statement from the applicant/certificant's Treasurer (or equivalent official), certifying to both the amount of current assets and the amount of total assets included in the accompanying balance sheet, which are located in the United States and acceptable for purposes of this Part, e.g., not pledged for purposes of Part 543. If the balance sheet and statement of income and surplus cannot be submitted in non-consolidated form, consolidated statements may be submitted if accompanied by an additional statement prepared by the involved CPA, certifying to the amount by which (A) the applicant's/certificant's total assets, located in the United States and acceptable for purposes of this Part, exceed its total liabilities, and (B) the applicant's/certificant's current assets, located in the United States and acceptable for purposes of this Part, exceed its current liabilities.

(ii) Semi-Annual Submissions - When the applicant's/certificant's self-insurance covers a vessel which carries oil or hazardous substances in bulk as cargo and its demonstrated net worth is not at least ten times the required amount, an affidavit shall be filed by the applicant's/certificant's corporate Treasurer (or the equivalent official in cases where the applicant/certificant is not a corporation) covering the first six months of the applicant's/certificant's fiscal year. Such affidavits shall state that neither the working capital nor the net worth have, during the first six months, fallen below the required amounts;

(iii) Additional Submissions - Additional financial information shall be submitted upon request of the Commission. All applicants/certificants who choose self-insurance shall notify the Commission within five days of the date such persons know, or have reason to believe, that the amounts of working capital or net worth have fallen below the amounts required by this subparagraph;

(iv) Time for Submissions - All required annual financial statements shall be received by the Commission within three calendar months after the close of the applicant's/certificant's fiscal year, and all six-month affidavits within one calendar month after close of the applicable six-month period. Upon written request, the Commission may grant a reasonable extension of the time limits for filing financial statements/affidavits, provided that the request sets forth good and sufficient reason to justify the requested extension and is received 15 days before the statements/affidavits are due. The Commission will not consider a request for an extension of more than 45 days;

(v) Failure to Submit - Failure to timely file any statement, data or affidavit required by this subparagraph (3) shall cause the revocation of the Certificate;

(vi) Waivers of Submissions - For good cause shown in writing by the applicant/certificant, the Commission may waive the working capital requirement in cases where the applicant/certificant is an economically regulated public utility, a municipal or higher-level governmental entity, or an entity which operates solely as a charitable, non-profitmaking organization. The Commission will consider good cause to have been shown when the applicant/certificant demonstrates in writing that the grant of such waiver would benefit at least a local public interest without resulting in undue risk to the environment and without resulting in undue risk that the applicant's/certificant's removal cost liability could not be met. In addition, for good cause shown in writing by the applicant/certificant, the Commission may waive the working capital requirement in any case where it can be demonstrated that working capital is not a significant factor in the applicant's/certificant's financial condition. An applicant's/certificant's net worth in relation to the amount of its exposure under the Act, as well as a history of stable operations will be major elements in such demonstration;

(4) Guaranty - An applicant/certificant may file with the Commission a Guaranty Form FMC-325 (Master Guaranty Form FMC-326 when applying for a Master Certificate) executed by

a guarantor acceptable to the Commission for purposes of these regulations. A guarantor shall be subject to and must fully comply with all of the self-insurance provisions of subparagraph (3) of this paragraph (b). In addition, the amounts of working capital and net worth required to be demonstrated by an acceptable guarantor shall be no less than the aggregate amounts underwritten as a guarantor and self-insurer pursuant to these regulations and the regulations of Part 543 of this Title;

(5) Other Methods - An applicant may choose any other method specially justified and acceptable to the Commission, provided that such other method is not a mere modification of any of the foregoing methods.

Appendix C

Excerpt from General Order No. 40

Federal Maritime Commission
August 28, 1978

Hazardous Substances

On August 11, 1978 (43 Fed. Reg. 35704), the Commission issued regulations (revised Part 542) to implement the Clean Water Act of 1977.[1] Those regulations concern removal cost liability on the part of vessel operators who discharge harmful quantities of oil or hazardous substances into United States waters.

The designation of hazardous substances, the harmful quantities thereof, and related provisions were published by the Environmental Protection Agency (EPA) on March 13, 1978 (43 Fed. Reg. 10474). However, on June 8, 1978, the United States District Court for the Western District of Louisiana, issued a preliminary injunction against certain of the EPA regulations. Manufacturing Chemists Association v. Douglas M. Costle, Civil Action No. 78-0578. Hearings on a permanent injunction were conducted on July 24, 1978.

In view of that pending court action, when the Commission issued revised Part 542 it stated in footnote 2 under the Supplementary Information portion of the Federal Register notice that:

> "The Commission will issue such further Order concerning the hazardous substances provisions of Part 542 as may be appropriate following release of the Court's decision."

On August 4, 1978, the Court issued its decision in Civil Action No. 78-0578 and held that major portions of the EPA's regulations are

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[1] P. L. 95-217, 91 Stat. 1566. The Clean Water Act amends the Federal Water Pollution Control Act, 33 U.S.C. 1321. The latter statute, as amended through 1977, is hereinafter referred to as the "Act".

"invalid, void, unenforceable, and of no legal effect."[2/] The validity of the hazardous substances provisions encompassed in the Commission's revised Part 542 depends entirely on the validity of the EPA's regulations concerning hazardous substances. Therefore, the Commission will stay all aspects of the hazardous substances provisions contained in revised Part 542 until further notice.

This action will not have any effect upon the validity of the regulations in revised Part 542 with respect to oil, nor does this action relieve vessel operators from submitting evidence of financial responsibility by using the methods set forth in section 542.8 of the regulations.

Two of the effects which will result from this action are: (1) that underwriters and their assured vessel operators, even though they submit evidence of financial responsibility as set forth in section 542.8, do not thereby assume liability for removal costs in connection with hazardous substances; and (2) non-self-propelled barges which do not carry oil as cargo or fuel but which do carry hazardous substances as cargo or fuel are relieved from the certification requirements of revised Part 542.

[2/] The Court's ruling does not appear to invalidate the EPA's list of designated hazardous substances. However, the clear invalidation of related provisions, especially the "harmful quantities" designation, renders the list void for most intents and purposes. Thus, at least, vessel operators and underwriters still know what substances are "hazardous substances", even though the Court's ruling means that, for the time being, discharges of such substances do not result in removal cost liability under section 311 of the Act.

The Commission will lift this stay by appropriate Order at such time as the legal impediments to the EPA's regulations under section 311 of the Act are removed. Commencing upon the effective date of the future Order which lifts this stay, all evidence of financial responsibility on file with the Commission shall automatically begin to cover liability for discharges of hazardous substances occurring on and after that effective date.

APPENDIX D

RAILROAD COMPREHENSIVE LIABILITY

I. In consideration of the premium as hereinafter provided it is understood and agreed that this policy shall indemnify the Assured for any and all sums which the Assured shall be legally obligated to pay as damages and expenses for personal injuries and damage to property arising out of occurrences during the period of this policy and resulting from the operations of the railroad. Such operations shall be deemed to include the assumption of liability under contracts that are normal and incidental to the operation of a railroad.

II. The Assured under this policy shall include partners, officers, directors, stockholders and employees, while acting as such in connection with the operations covered, but it is understood and agreed that this inclusion does not increase the Company's limit of liability in respect of any one occurrence as hereinafter stated.

III. It is specifically understood and agreed that the intention of paragraph 1 is to include coverage for the Assured's liability for injury, death, sickness or disease to any persons, including employees and including liability under any Workmen's Compensation Act or the Federal Employer's Liability Act, as well as damage to any property of others including foreign rolling stock.

IV. The limit of coverage hereunder shall be $____________________ any one occurrence and shall apply only in excess of $____ ______________ultimate net loss in respect of each occurrence. Ultimate net loss shall consist of the amounts paid for settlement of losses for which the Assured is liable after making deductions for all recoveries, salvages and other insurances, but shall include expenses and costs incurred in connection therewith (other than expenses for salaried employees, retained counsel and office expenses of the Assured) not covered by other insurance.

V. Exclusions

This policy does not apply:

(a) To any loss which at the time of the happening of such loss, is insured by, or would, but for the existence of this policy be insured by any other existing policy or policies of valid and collectible insurance, except in respect of any excess beyond the amount which would have been payable under such other policy or policies had this insurance not been in effect;

(b) To any loss arising out of the Assured's operation, maintenance or use of automobiles and/or buses and/or aircraft and/or vessels and/or watercraft.

SPECIMEN

VI. Conditions

A. Notice of Occurrence — Co-operation over claims.

The Assured shall immediately give written notice to The Canton Agency and/or Midland Insurance Company of any occurrence or claim which could reasonably be anticipated by the Assured to involve an amount in excess of the underlying limits should the Assured be ultimately held legally liable for the occurrence or claim. Solely for the purposes of reporting claims or occurrences, the Assured shall in all instances consider himself legally liable for such claims or occurrences.

The course to be adopted by the Assured in connection with the defense or settlement of such claim or claims shall be determined between the Assured and the Company or their representatives. The Assured shall cooperate with the representatives of the Company in the defense of suits and actions by rendering aid and in effecting settlements, securing evidence and prosecuting appeals as may be reasonably requested by the Company or their representatives. The Assured shall not without the consent of the Company or their representatives litigate any such claim or claims.

In case of difference of opinion the parties agree to follow the advice of a referee to be mutually agreed.

B. Subrogation

Inasmuch as this policy is "Excess coverage", the Assured's right of recovery against any person or other entity cannot be exclusively subrogated to the Company. It is, therefore, understood and agreed that in case of any payment hereunder, the Company will act in concert with all other interests (including the Assured) concerned, in the exercise of such rights of recovery. The apportioning of any amounts which may be so recovered shall follow the principle that any interests (including the Assured) that shall have paid an amount over and above any payment hereunder shall first be reimbursed up to the amount paid by them; the Company is then to be reimbursed out of any balance then remaining up to the amount paid hereunder; lastly the interests (including the Assured) of whom this coverage is an excess are entitled to claim the residue, if any. Expenses necessary to the recovery of any such amounts shall be apportioned between the interests (including the Assured) concerned, in the ratio of their respective recoveries as finally settled.

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C. Bankruptcy and Insolvency.

In the event of the bankruptcy or insolvency of the Assured, or any entity comprising the Assured, the company shall not be relieved thereby of the payment of any claims hereunder because of such bankruptcy or insolvency.

D. Inspection and Audit.

The Company shall be permitted at all reasonable times during the continuance of this policy to inspect the premises, plants, machinery and appliances used in connection with the Assured's trade, business or work, and to examine during the continuance of this policy or within one year after its termination the Assured's books or other records so far as they relate to the basis of the premium computation of this policy.

E. Cancellation.

This policy may be cancelled at any time at the written request of the Assured or by the Company or their representatives with or without the return or tender of the unearned premium by giving thirty days notice of such cancellation, in which event the earned premium shall be adjusted in the customary short rate basis should the policy be cancelled by the Assured or on a pro rata basis should the policy be cancelled by the Company.

F. Premium Computation.

It is understood and agreed that the premium shown hereon is provisional and the final premium shall be computed at a rate of____________per $100 of gross receipts from the operations covered. The annual minimum premium for this policy shall be____________.

All other Terms and Conditions remained unchanged.

Attached to and forming part of Policy No.

Broker/Agent: MIDLAND INSURANCE COMPANY

Date of Issue: By____________________

SPECIMEN

UND No. 61-2

This endorsement modifies such insurance as is afforded by the provisions of the policy relating to the following:

IT IS AGREED THAT CONDITION G "DEFINITIONS" IS ADDED TO PARAGRAPH VI CONDITIONS OF RAILROAD COMPREHENSIVE LIABILITY FORM ATTACHED TO THIS POLICY.

G DEFINITION:

OCCURENCE. THE WORD "OCCURRENCE" WHEREVER USED IN THIS POLICY MEANS ONE HAPPENING OR SERIES OF HAPPENINGS ARISING OUT OF ONE EVENT TAKING PLACE DURING THE TERM OF THIS POLICY.

SPECIMEN

(The information below is required to be completed only when this endorsement is issued subsequent to the policy effective date.)

Effective *this endorsement forms a part of Policy No.*

issued to

by MIDLAND INSURANCE COMPANY

AUTHORIZED REPRESENTATIVE

UND No. 75

(The Attaching Clause need be completed only when this endorsement is issued subsequent to preparation of the policy.)

LIABILITY

IRB-G 335 — G 335

L 6481
(Ed. 6-70)

EXCLUSION

(Contamination or Pollution)

This endorsement modifies such insurance as is afforded by the provisions of the policy relating to the following:

COMPREHENSIVE GENERAL LIABILITY INSURANCE
COMPLETED OPERATIONS AND PRODUCTS LIABILITY INSURANCE
CONTRACTUAL LIABILITY INSURANCE
MANUFACTURERS' AND CONTRACTORS' LIABILITY INSURANCE
OWNERS' AND CONTRACTORS' PROTECTIVE LIABILITY INSURANCE
OWNERS', LANDLORDS' AND TENANTS' LIABILITY INSURANCE
SPECIAL PROTECTIVE AND HIGHWAY LIABILITY INSURANCE — NEW YORK DEPARTMENT OF TRANSPORTATION
STOREKEEPER'S INSURANCE

This endorsement, effective (12:01 A. M., standard time), forms a part of policy No.

issued to

by

Authorized Representative

It is agreed that the insurance does not apply to bodily injury or property damage arising out of the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water; but this exclusion does not apply if such discharge, dispersal, release or escape is sudden and accidental.

AUTHENTIC

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SERVICE OF SUIT CLAUSE (U.S.A.)

It is agreed that in the event of the failure of Underwriters hereon to pay any amount claimed to be due hereunder, Underwriters hereon, at the request of the insured (or reinsured), will submit to the jurisdiction of any Court of competent jurisdiction within the United States and will comply with all requirements necessary to give such Court jurisdiction and all matters arising hereunder shall be determined in accordance with the law and practice of such Court.

It is further agreed that service of process in such suit may be made upon THE INSURANCE COMMISSIONER ANY STATE and that in any suit instituted against any one of them upon this contract, Underwriters will abide by the final decision of such court or of any Appellate Court in the event of an appeal.

THE DESIGNATED INSURANCE COMMISSIONER is authorized and directed to accept service of process on behalf of Underwriters in any such suit and/or upon the request of the insured (or reinsured) to give a written undertaking to the insured (or reinsured) that he will enter a general appearance upon Underwriters' behalf in the event such a suit shall be instituted.

Further pursuant to any statute of any state, territory or district of the United States which makes provision therefor, Underwriters hereon hereby designate the Superintendent, Commissioner or Director of Insurance or other officer specified for that purpose in the statute, or his successor or successors in office, as their true and lawful attorney upon whom may be served any lawful process in any action, suit or proceeding instituted by or on behalf of the insured (or reinsured) or any beneficiary hereunder arising out of this contract of insurance (or reinsurance), and hereby designate the above-named as the person to whom the said officer is authorized to mail such process or a true copy thereof.

Attached to and forming part of Policy No.

Issued to:

By: MIDLAND INSURANCE COMPANY

Dated: By__________________________

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Endt. # 3

This endorsement modifies such insurance as is afforded by the provisions of the policy relating to the following:

COMPREHENSIVE GENERAL LIABILITY

IN CONSIDERATION OF THE PREMIUM CHARGED IT IS AGREED THAT THE FOLLOWING ARE DELETED IN THEIR ENTIRETY FROM POLICY PROVISIONS-

1. SUPPLEMENTARY PAYMENTS
2. DEFINITIONS
3. CONDITIONS

IT IS FURTHER AGREED THAT THE NUCLEAR ENERGY LIABILITY EXCLUSION ENDORSEMENT (BROAD FORM) REMAINS UNCHANGED.

SPECIMEN

(The information below is required to be completed only when this endorsement is issued subsequent to the policy effective date.)

Effective , *this endorsement forms a part of Policy No.*

issued to

by MIDLAND INSURANCE COMPANY

AUTHORIZED REPRESENTATIVE

ENDORSEMENT

It is hereby agreed that the insurance with respect to Railroad Operations does not apply to Bodily Injury to any passenger being carried while in or upon, entering or alighting from any such train, cars or equipment.

Effective ______________________ 12:01 AM Standard Time, this Endorsement No. ______________

attached to and made a part of Policy No. ______________ of MIDLAND INSURANCE COMPANY

issued to ____

(The information above is required only when this endorsement is issued subsequent to preparation of the policy.)

Nothing herein contained shall be held to vary, alter, waive or extend any of the terms, conditions, agreements or limitations of this policy other than as above stated.

C. J. Duffy
C.J. Duffy, Secretary

M S Chenault
M.S. Chenault, President

By ______________________________
Authorized Representative

FORM UND 262 (1/77) 10M

ORIGINAL D-7

ENDORSEMENT

EXCLUSION

(CONTAMINATION OR POLLUTION)

IT IS AGREED THAT THE INSURANCE DOES NOT APPLY TO BODILY INJURY OR PROPERTY DAMAGE ARISING OUT OF THE DISCHARGE, DISPERSAL, RELEASE OR ESCAPE OF SMOKE, VAPORS, SOOT, FUMES, ACIDS, ALKALIS, TOXIC CHEMICALS, LIQUIDS OR GASES, WASTE MATERIALS OR OTHER IRRITANTS, CONTAMINANTS OR POLLUTANTS INTO OR UPON LAND, THE ATMOSPHERE OR ANY WATERCOURSE OR BODY OF WATER; BUT THIS EXCLUSION DOES NOT APPLY IF SUCH DISCHARGE, DISPERSAL, RELEASE OR ESCAPE IS SUDDEN AND ACCIDENTAL

Effective ______________________ 12:01 AM Standard Time, this Endorsement No. ____________
attached to and made a part of Policy No. ____________ of MIDLAND INSURANCE COMPANY
issued to ____

(The information above is required only when this endorsement is issued subsequent to preparation of the policy.)

Nothing herein contained shall be held to vary, alter, waive or extend any of the terms, conditions, agreements or limitatio of this policy other than as above stated.

Karl E. Djerf
Karl E. Djerf, Secretary

James P. Craig
James P. Craig, President

By
Authorized Representative

APPENDIX E

Unit Costs Employed for Calculations of Spill "Clean-Up" Costs

A. Major Hazardous Substances "Clean-Up"[1]

Spill Category	Applied to Spilled Substance	"Clean-Up" Cost	
		Per Gallon	Per lb.
	Railroad		
8 or 11[2]	Sulfuric Acid	$ 2.30[3]	$ .28[3]
8 or 11[2]	Hydrocloric Acid	2.30[3]	.28[3]
9	Chlorine	4.17	.50
9	LPG	4.17	.50
8	Anhydrous Ammonia	1.34	.16
8	Caustic Soda	1.34	.16
8 or 11[2]	Phosphoric Acid	2.30[3]	.28[3]
8 or 11[2]	Hydrofloric Acid	2.30[3]	.28[3]
11	Acrylonitrile	3.25	.39
9	Sulfur Dioxide	4.17	.50
	Water Carrier		
3	Diesel Fuel	8.34	1.00
3	Fuel Oil	8.34	1.00
3	Crude Oil	8.34	1.00
3	Gasoline	8.34	1.00
3	Waste Oil	8.34	1.00
	Motor Carrier		
11	Gasoline	3.25	.39
8 or 11[2]	Sulfuric Acid	2.30[3]	.28[3]
8	Anhydrous Ammonia	1.34	.16
8	Caustic Soda	1.34	.16
9	LPG	4.17	.50
8 or 11[2]	Hydochloric Acid	2.30[3]	.28[3]
10	Fuel Oil	1.34	.16
9	Chlorine	4.17	.50
10	Organic Phosphate	1.34	.16
10	Nitrobenzol	1.34	.16

---

[1] Most frequently spilled hazardous substances by mode.

[2] Category dependent upon chemical concentration.

[3] Adjusted to account for differing chemical concentrations.

B. Other "Clean-Up" Costs

Item	"Clean-Up" Cost Per Person or Incident
Wrongful Death Compensation	$600,000
Bodily Injury:	
Medical Treatment	$ 40 per person per incident
Emergency Room Treatment	$ 100 per person per incident
Compensation in lieu of income	$ 300 per week
Hospitalization	$ 2,000 per person per incident
Evacuation	$ 600 per episode
Third Party Property Damage	Incident Specific

Appendix F

Highlights of Proposed Legislation and Rules to Create a "Superfund" and Establish Minimum Amounts of Financial Responsibility

1. Ninety-sixth Congress, 1st Session, H.R. 85 and H.R. 29, Comprehensive Oil Pollution Liability and Compensation Act

Both bills were introduced on January 15, 1979, and referred jointly to the Committees on Merchant Marine and Fisheries and Public Works and Transportation.

As of this writing, H.R. 85 has been passed by the Merchant Marine and Fisheries Committee but has not been voted on by the Public Works and Transportation Committee.

H.R. 29 is very similar in concept to H.R. 85; where significant differences occur in these two proposals it is so noted below. Unless stated otherwise, first reference is to H.R. 85, the Bill introduced by Mr. Biaggi and others. H.R. 29 was introduced by Mr. Studds.

§102 Creates the "Comprehensive Oil Spill Liability Fund"

- should not exceed $200 million, but not less than $150 million
- collected by the Treasury Department
- administered by the Secretaries of Transportation and Treasury
- fees may be up to three cents per barrel of oil received at a terminal or refinery for export or entry into the United States

- fees paid by terminal or refinery owner

§103 Recoverable Damages and Claimants

- removal costs
- injury to or destruction of real or personal property
- loss of use of real or personal property
- injury to or destruction of natural resources
- loss of use of natural resources
- loss of profits on real or personal property or natural resources
- loss of tax revenue for a period not to exceed one year

§104 Liability Limits of Owner or Operator

- other than a ship or inland oil barge, $150 per gross ton
- inland oil barge, $150,000 or $150 per gross ton, whichever is greater
- ship, $250,000 or $300 per gross ton (up to a maximum of $50 million) whichever is greater

  [H.R. 29 sets these amounts at $300,000 or $300 per gross ton, and up to $50 million]
- deepwater port subject to the Deepwater Port Act of 1974, $50 million
- offshore facility operated under the Outer Continental Shelf Lands Act, removal costs plus $50 million
- other facilities, up to $50 million as determined by the Secretary of Transportation
- these limits do not apply if the incident is caused by gross negligence or by violation of regulations, or when the owner or operator refuses to provide cooperation in cleanup activities

§105 Financial Responsibility

- the owner or operator of a vessel over 300 gross tons which uses an offshore or onshore facility or the navigable waters shall establish and maintain evidence of financial responsibility sufficient to satisfy the standards set forth in abovementioned liability limits
- the owner or operator of a facility that is used for drilling for, producing or processing oil or has the capacity to handle 1,000 barrels of oil at any one time shall show evidence of financial responsibility to satisfy liability limits mentioned above [H.R. 29 places these same limits on all offshore facilities]

2. Ninety-sixth Congress, 1st Session, S. 684, Oil Transportation by Vessel Liability Act

Introduced by Mr. Magnuson on March 15, 1979, first referred to the Committee on Commerce, Science and Transportation; on March 29, 1979, referred jointly to the former Committee and the Committee on Environment and Public Works

§6 Creates the "Oil Cargo Liability Fund"

- fund may not exceed $250 million
- fees may be up to three cents per barrel of oil received at a terminal or refinery

§5 Recoverable Damages and Claimants

- injury to or destruction of real or personal property
- loss of use of real or personal property
- injury to or destruction of natural resources
- loss of use of natural resources
- loss of profits on real or personal property or natural resources

- loss of tax revenue for a period not to exceed one year

§4 Liability Limits of Owner or Operator

- vessel not carrying oil in bulk, $150 per gross ton
- vessel carrying oil in bulk, $300 per gross ton or $500,000, whichever is greater
- these limits do not apply if the incident is caused by gross negligence or by violation of regulations, or when the owner or operator refuses to provide cooperation in cleanup activities

§10 Financial Responsibility

- the owner or operator of a vessel over 300 gross tons which uses any facility or the navigable waters shall establish and maintain evidence of financial responsibility to satisfy liability limits mentioned above

3. Outer Continental Shelf Lands Act Amendments of 1978, P.L. 95-372, enacted September 18, 1978, Proposed Rules, December 4, 1978, 33CFR Parts 130, 131, Offshore Oil Pollution Liability and Compensation, Agency: Coast Guard, (NPR published in Federal Register, Vol. 43, No. 233).

Applicability

- regulations apply to offshore facilities (drilling units, wells, platforms and pipelines) operating under the Outer Continental Shelf Lands Act.

Offshore Oil Pollution Compensation Fund

- created under the Outer Continental Shelf Lands Act of 1978
- jointly administered by the Secretaries of Transportation and Treasury
- fund will initially cover spills as a result of activities on the OCS; (Coast Guard expects

legislative actions to expand scope to include all marine oil pollution)
- amount of fund not to exceed $200 million but more than $100 million
- fee not to exceed three cents per barrel of oil produced from the OCS

Part 131, Subpart C, Recoverable Damages and Claimants
- removal and cleanup cost
- injury to or destruction of property
- loss of property
- injury to or destruction of natural resources
- loss of use of natural resources
- loss of profits on real or personal property or natural resources
- loss of tax revenue for a period of one year

§130.201 Financial Responsibility
1. By guarantee, surety bond, or self-insurance
   - offshore facility able to handle 1,000 barrels of oil at a time must maintain $35 million
   - two facilities, $43 million
   - three facilities, $47 million
   - four facilities, $49 million
   - five or more facilities, $50 million
2. By insurance
   - $35 million for each facility

4. Outer Continental Shelf Lands Act Amendments of 1978, P.L. 95-372, enacted September 18, 1978, Proposed Rules, 46CFR 544, Financial Responsibility for Water Pollution, Agency: FMC

This proposed rule specifies minimum amounts of financial responsibility, how compliance is to be demonstrated, and how certificates are issued. No mention is made of a superfund; proposed rules do not supersede existing regulations under Water Pollution Control Act (FWPCA) and Trans-Alaska Pipeline Authorization Act.

Applicability

- regulations apply to vessels transporting oil from an offshore facility located on the Outer Continental Shelf, and then only when such vessels are in offshore waters

§544.8 Financial Responsibility

- $300 per gross ton or $250,000, whichever is greater
- if several vessels are owned by one person, the amounts will be based on the tonnage of the largest vessel owned
- these amounts are separate from and in addition to the amount of financial responsibility required of an applicant pursuant to Parts 542 and 543 of this Title. The amounts rerequired under Part 542, implementing section 311 of the Federal Water Pollution Control Act, are:
    - for inland oil barges, $125 per gross ton or $125,000, whichever is greater
    - for vessels other than inland barges which carry oil, $150 per gross ton or $250,000, whichever is greater
    - for vessels not carrying oil or hazardous substances, $150 per gross ton

  the amount required under Part 543, implementing section 204(c) of the Trans-Alaska Pipeline Authorization Act, is $14 million for each applicant

APPENDIX G

PARTIAL LIST OF PERSONS AND ORGANIZATIONS CONTACTED

1. U.S. Government Agencies

U.S. Environmental Protection Agency

- General Counsel's Office
- Marine Activities Office
- Office of Solid Waste Management

Federal Maritime Commission

Interstate Commerce Commission

- General Counsel's Office
- Section of Motor, Water, Forwarder Operations

National Transportation Safety Board

U.S. Department of Transportation

- Federal Railroad Administration
- U.S. Coast Guard

2. Other Public Agencies

Kentucky Department of Housing, Buildings and Construction

Louisiana Public Service Commission

Maine Department of Environmental Protection

Maine Department of Transportation

City of Phoenix Fire Department

Tennessee Department of Transportation

Wisconsin Department of Natural Resources

3. Private Sector Persons, Organizations, and Businesses

Aetna Commercial Lines Department

Mr. L. Berg

Mr. J. Cooper

Alamo Chemical Transportation Company

Mr. C.N. Millican

Alexander & Alexander

Mr. A. Swann

American Association of Short Line Railroads

American Commercial Barge Line Company

Mr. R. Stith

American Insurance Association, Hazardous Transportation Committee

A. Kolmykow

J. Raskin

S. Ripley

American Petroleum Institute

Mr. J. Blackburn

American Waterway Operators, Inc.

Mr. H. Muth

Mr. N. Schuster

Ashland Oil Company

Mr. F. Charles

Association of American Railroads

Mr. C. Lyons

Burdick & Hunter

P. Lynch

Canal Barge Company, Inc.
    Mr. H.M. Lane

Canton Agency, Inc.
    Mr. W. Beadell

Chessie System

Chotin Transportation Company
    Mr. Berger

Federal Barge Lines, Inc.
    Mr. O. Patty

Hollowey Waste Oil
    Mr. J. Hollowey

Houston Barge Line, Inc.
    Mr. G. Force

Howden & Company
    Mr. K. Goldstein

Ingram Barge Company
    D.F. Sampsell

International Risk Managers, Ltd.
    Mr. R. Salamansky

James Waste Oil
    Mr. J. Holder

Kentucky Petroleum
    Mr. L. Sharecliff

Lexington Insurance Company
    Mr. P. Foster
    Mr. K. Kelley

Marsh - McLennon
    Mr. R. Harris

National Association of Regulatory Utility Commissions
    Mr. D. Burke

National Marine Service, Inc.
    Mr. S. Howson

Nilo Barge Line, Inc.
    Mr. J. Bowman

Peavey Company (Barge Division)

Shaver Transportation Company

Southern Railway, Insurance Department
    Mr. J. Vonderhaar

Starr Associates, Inc.
    Mr. R. Barnes
    Mr. R. Lewis

Twin City Barge and Towing Company
    Mr. Powers

Water Quality Insurance Syndicate

Water Transport Association
    Mr. Creddi

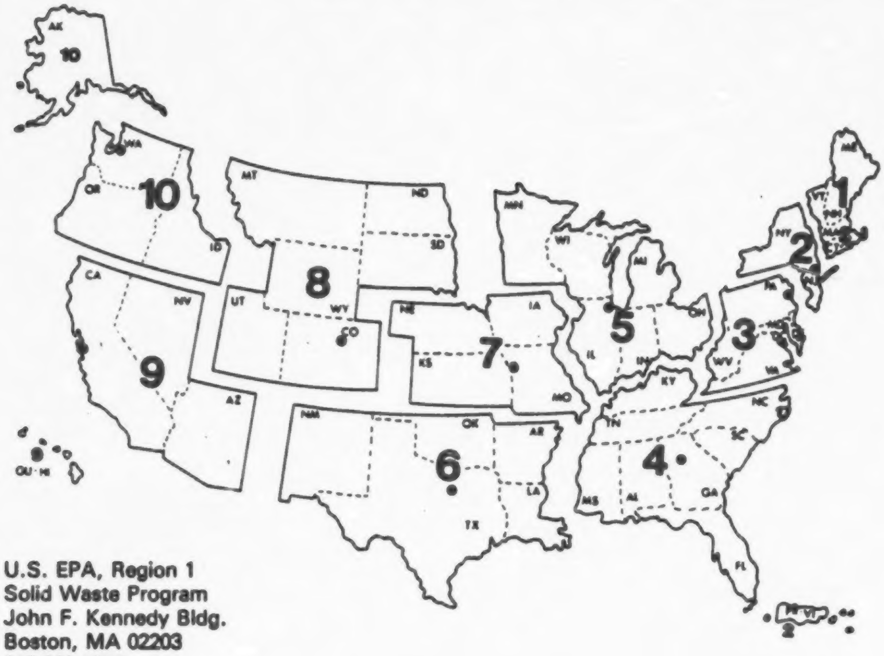
Wisconsin Barge Line, Inc.
    Mr. Allen

W.T. Burton Company
    Mr. C. Carwile

(For sake of brevity, some fifty motor carriers surveyed are not listed.)

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979 - 281-147/113

EPA REGIONS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PR - VI

U.S. EPA, Region 1
Solid Waste Program
John F. Kennedy Bldg.
Boston, MA 02203
617-223-5775

U.S. EPA, Region 2
Solid Waste Section
26 Federal Plaza
New York, NY 10007
212-264-0503

U.S. EPA, Region 3
Solid Waste Program
6th and Walnut Sts.
Philadelphia, PA 19106
215-597-9377

U.S. EPA, Region 4
Solid Waste Program
345 Courtland St., N.E.
Atlanta, GA 30308
404-881-3016

U.S. EPA, Region 5
Solid Waste Program
230 South Dearborn St.
Chicago, IL 60604
312-353-2197

U.S. EPA, Region 6
Solid Waste Section
1201 Elm St.
Dallas, TX 75270
214-767-2734

U.S. EPA, Region 7
Solid Waste Section
1735 Baltimore Ave.
Kansas City, MO 64108
816-374-3307

U.S. EPA, Region 8
Solid Waste Section
1860 Lincoln St.
Denver, CO 80295
303-837-2221

U.S. EPA, Region 9
Solid Waste Program
215 Fremont St.
San Francisco, CA 94105
415-556-4606

U.S. EPA, Region 10
Solid Waste Program
1200 6th Ave.
Seattle, WA 98101
206-442-1260